

SITE NAME: LELAND HILL WATER TANK

29 LELAND HILL ROAD  
GRAFTON, MA 01757  
WORCESTER COUNTY

SITE NUMBER: 4WL0968A

RF DESIGN GUIDELINE: 707C TOWER

GENERAL NOTES

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



PROJECT SUMMARY

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT INSTALLATION

SITE ADDRESS: 29 LELAND HILL ROAD  
GRAFTON, MA 01757

LATITUDE: 42° 10' 34.31"

LONGITUDE: 71° 42' 13.67"

ZONING JURISDICTION: TOWN OF GRAFTON, MA

CURRENT USE: TOWN WATER TANK

PROPOSED USE: TELECOMMUNICATIONS FACILITY

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APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
LANDLORD	DATE

72 HOURS



CALL  
BEFORE YOU DIG  
CALL TOLL FREE 1-888-DIG-SAFE  
OR CALL 811



UNDERGROUND SERVICE ALERT

T-MOBILE  
NORTHEAST LLC

15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
OFFICE: (508) 286-2700  
FAX: (508) 286-2893



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RAYNHAM, MA 02767



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



CHECKED BY: RP

APPROVED BY: DJC

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5	02/26/18	REVISED FOR CONSTRUCTION	VP
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T-1



GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR – CENTERLINE COMMUNICATIONS  
SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)  
OWNER – T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015 WITH 780 CMR 9TH EDITION AMENDMENTS  
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS  
LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR’S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222–G, STRUCTURAL STANDARDS FOR STEEL

EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

T-MOBILE  
NORTHEAST LLC

15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
OFFICE: (508) 286-2700  
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RAYNHAM, MA 02767



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CHECKED BY:RP

APPROVED BY:DJC

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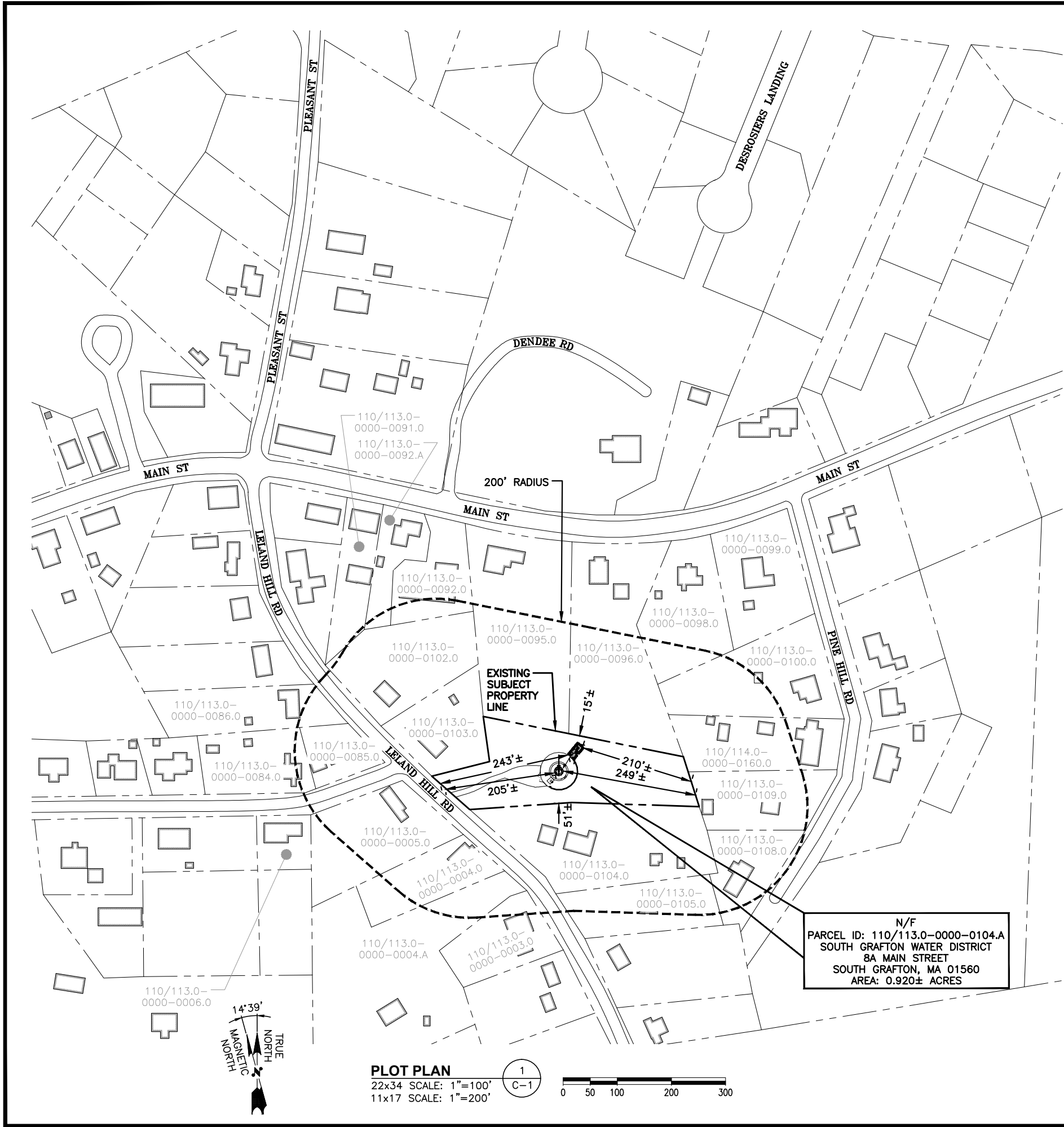
SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-1





NOTES:

- PLOT PLAN PREPARED BY HUDSON DESIGN GROUP, LLC. FROM GIS, ASSESSORS DATA AND OTHER SOURCES, ACCESSED 01/05/18, AND DOES NOT REPRESENT AN ACTUAL FIELD OR BOUNDARY SURVEY.
- THE ENGINEER AND/OR ARCHITECT PREPARING THE PLANS INDICATING THE BUILDING(S) AND SITE HAVE BEEN DESIGNED TO COMPLY WITH PERFORMANCE STANDARDS SET FORTH IN SECTION 4.1 OF THE ZONING BY LAW OF THE TOWN OF GRAFTON, MA.

ZONING INFORMATION

ZONING DISTRICT:	RESIDENTIAL (R2)		
DIMENSIONS REQUIREMENTS:	REQUIRED	PROPOSED ANTENNAS	PROPOSED EQUIPMENT
FRONT YARD SETBACK:	30'	205'±	243'±
SIDE YARD SETBACK:	15'	51'±	15'±
REAR YARD SETBACK:	15'	249'±	210'±
(ALL MEASUREMENTS ARE IN FEET ± UNLESS OTHERWISE NOTED)			

LEGEND

	SUBJECT PROPERTY LINE
	ABUTTING PROPERTY LINE
	200' RADIUS
	MAP XX LOT XX
	EXISTING BUILDING

GENERAL NOTES:

- PROPERTY OWNER: SOUTH GRAFTON WATER DISTRICT  
8A MAIN STREET  
SOUTH GRAFTON, MA 01560
- SITE NAME: LELAND HILL WATER TANK
- SITE ADDRESS: 29 LELAND HILL ROAD  
GRAFTON, MA 01757
- APPLICANT: T-MOBILE NORTHEAST LLC  
15 COMMERCE WAY, SUITE B  
NORTON, MA 02766
- JURISDICTION: TOWN OF GRAFTON, MA
- TAX ID PARCEL NUMBER: 110/113.0-0000-0104.A
- ZONING JURISDICTION: RESIDENTIAL 2 (R2)
- FEMA FLOOD HAZARD DESIGNATION: ZONE X
- PROPERTY LINE INFORMATION (WHEN APPLICABLE) WAS PREPARED USING TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUCTED AS A BOUNDARY SURVEY.
- ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL CALL THE FOLLOWING FOR ALL PRE-CONSTRUCTION NOTIFICATION 72-HOURS PRIOR TO ANY EXCAVATION ACTIVITY:  
DIG SAFE SYSTEM (MA, ME, NH, RI, VT): GENERAL RESIDENTIAL, AGRICULTURAL, RURAL 1-888-344-7233  
CALL BEFORE YOU DIG (CT): 1-800-922-4455
- THE WIRELESS TELECOMMUNICATION FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
- THE WIRELESS TELECOMMUNICATION FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. (THERE IS NO HANDICAP ACCESS REQUIRED).

T-MOBILE  
NORTHEAST LLC

15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
OFFICE: (508) 286-2700  
FAX: (508) 286-2893



95 RYAN DRIVE #1  
RAYNHAM, MA 02767



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



CHECKED BY: RP

APPROVED BY: DJC

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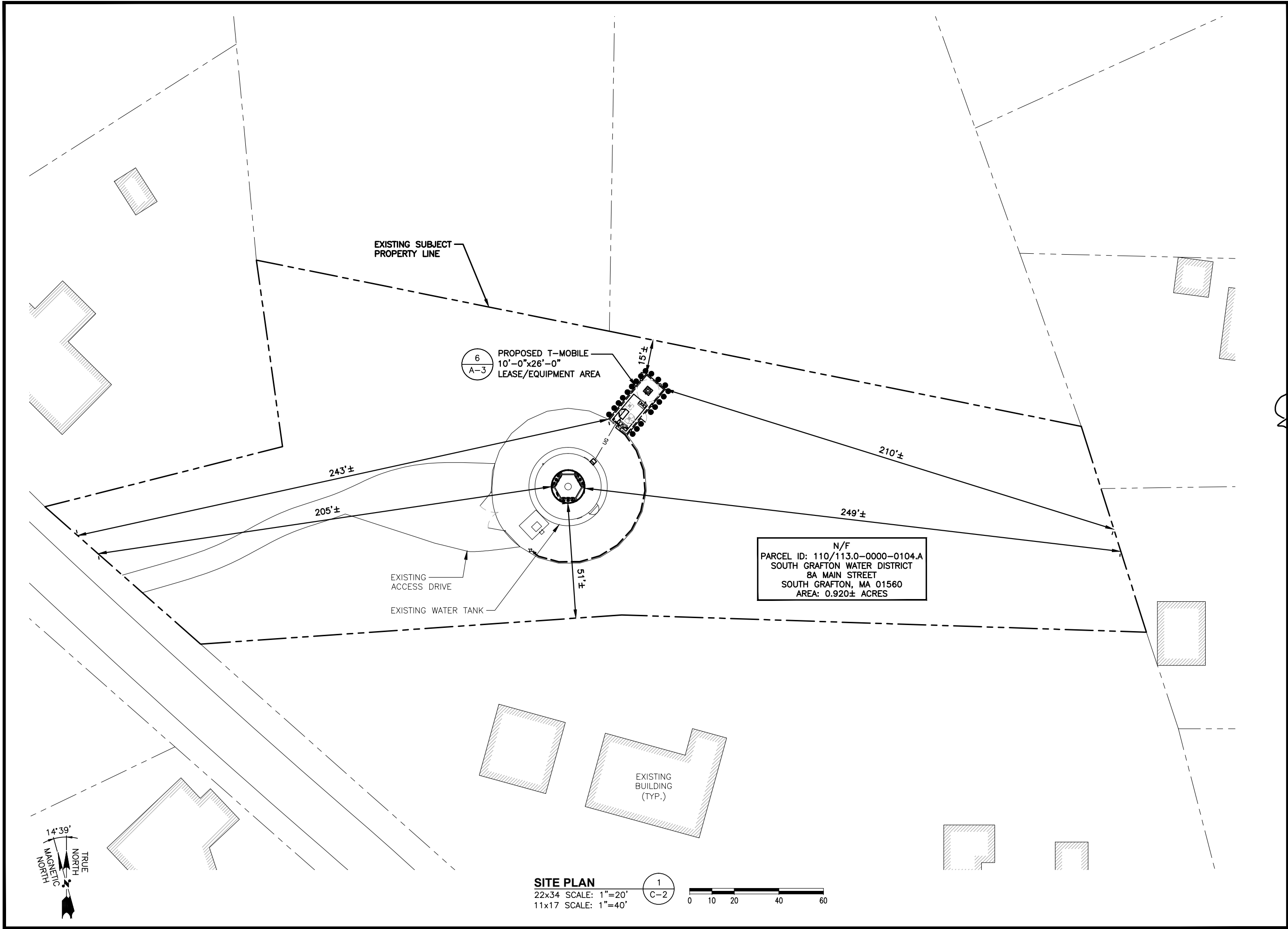
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PLOT PLAN

SHEET NUMBER

C-1





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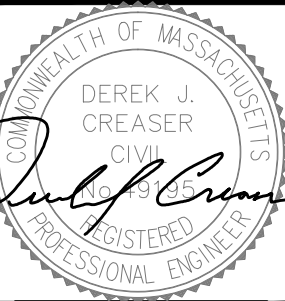
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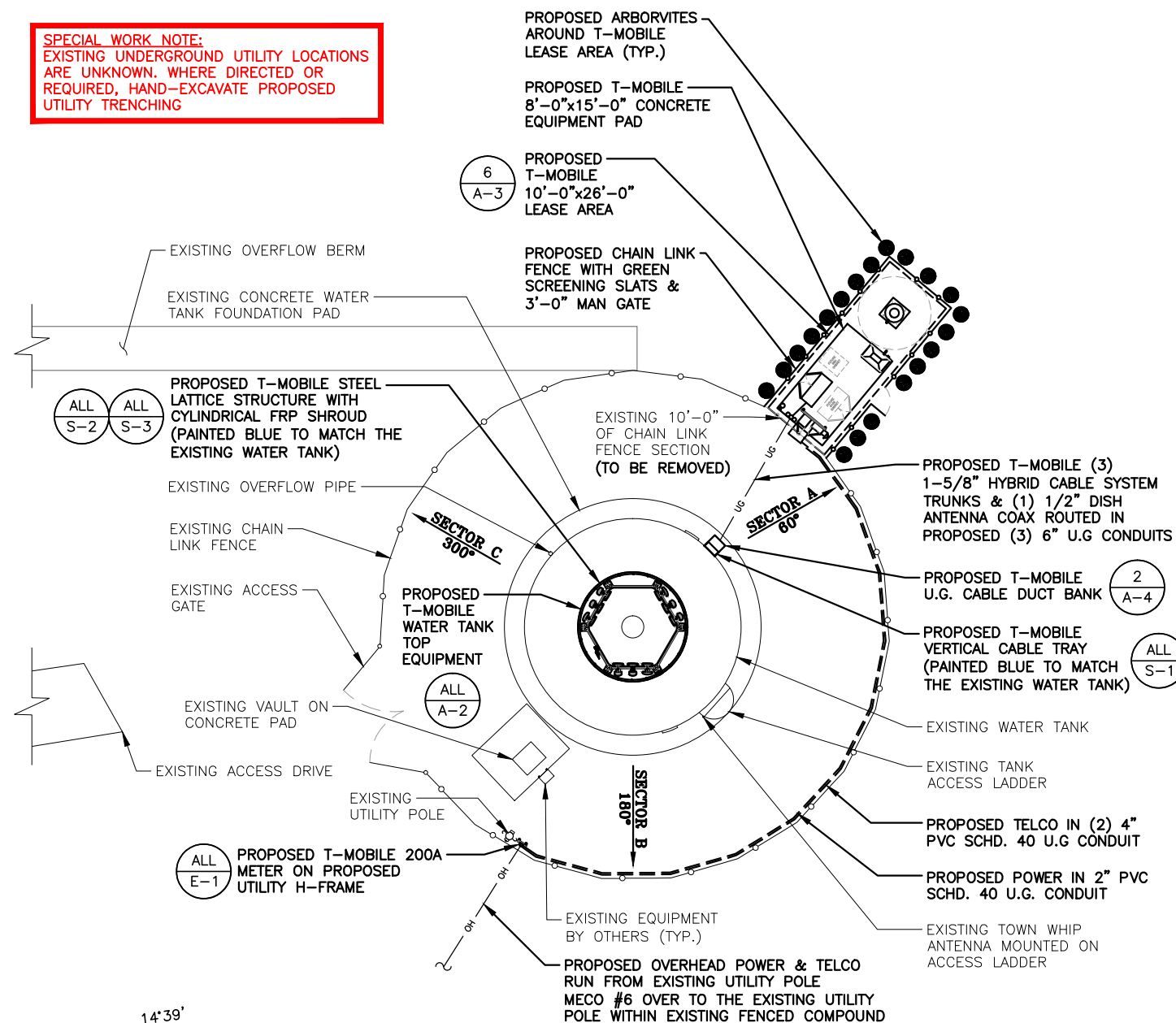
SITE PLAN

SHEET NUMBER

C-2



**SPECIAL WORK NOTE:**  
EXISTING UNDERGROUND UTILITY LOCATIONS  
ARE UNKNOWN. WHERE DIRECTED OR  
REQUIRED, HAND-EXCAVATE PROPOSED  
UTILITY TRENCHING



#### COMPOUND PLAN

22x34 SCALE: 3/32"=1'-0"  
11x17 SCALE: 3/64"=1'-0"

1  
A-1

0 5'-4" 10'-8" 21'-4" 32'-0"

ALL S-2 ALL S-3 PROPOSED T-MOBILE STEEL LATTICE  
STRUCTURE WITH CYLINDRICAL FRP  
SHROUD (PAINTED BLUE TO MATCH  
THE EXISTING WATER TANK)

3,4 A-2 PROPOSED T-MOBILE ANTENNA  
(TYP. OF 3 PER SECTOR, TOTAL OF 9)

6 A-2 PROPOSED T-MOBILE RRUS  
(TYP. OF 3 PER SECTOR, TOTAL OF 9)

TOP OF PROPOSED MOUNTING STRUCTURE  
ELEV. = 70.0'± A.G.L.

OF PROPOSED T-MOBILE ANTENNAS  
ELEV. = 65'-0"± A.G.L.

TOP OF EXISTING WATERTANK DOME  
ELEV. = 55.0'± A.G.L.

TOP OF EXISTING WATERTANK RIM  
ELEV. = 50.0'± A.G.L.

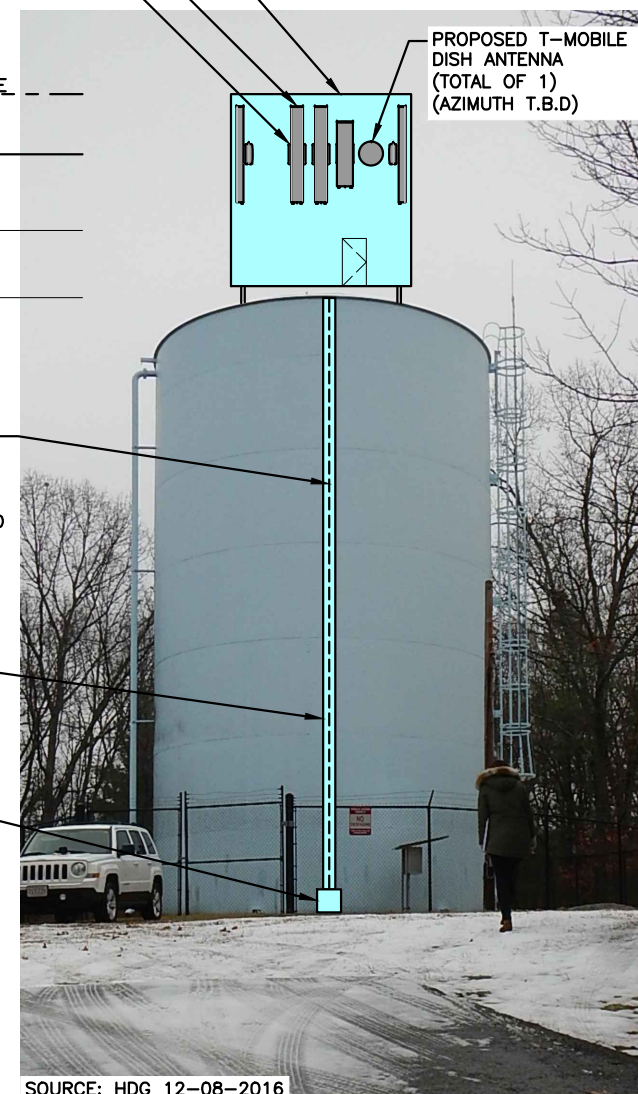
PROPOSED (3) 1-5/8" HYBRID CABLE  
SYSTEM TRUNKS & (1) 1/2" DISH  
ANTENNA COAX ROUTED IN  
PROPOSED (3) 6" U.G. CONDUITS

2  
A-4

ALL  
S-1

PROPOSED T-MOBILE  
VERTICAL CABLE TRAY  
(PAINTED BLUE TO MATCH  
THE EXISTING WATER TANK)

2 A-4 PROPOSED T-MOBILE  
U.G. CABLE DUCT BANK



SOURCE: HDG 12-08-2016

**TOWER ELEVATION PHOTO DETAIL**  
SCALE: N.T.S.

2  
A-1



SOURCE: HDG 12-08-2016

**EQUIPMENT LOCATION PHOTO DETAIL**  
SCALE: N.T.S.

3  
A-1

**STRUCTURAL NOTES:**  
PRIOR TO COMMENCING CONSTRUCTION, GC  
SHALL REFER TO STRUCTURAL ANALYSIS  
PROVIDED BY HDG, DATED: FEBRUARY 06, 2017  
TO DETERMINE IF THERE ANY SUPPLEMENTAL OR  
SPECIAL INSTALLATION REQUIREMENTS, OR  
RELOCATION ARRANGEMENTS.

## T-MOBILE NORTHEAST LLC

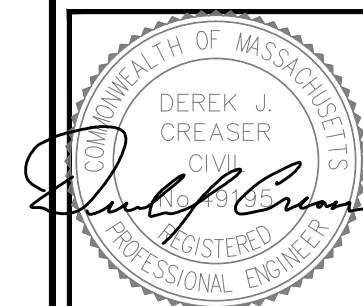
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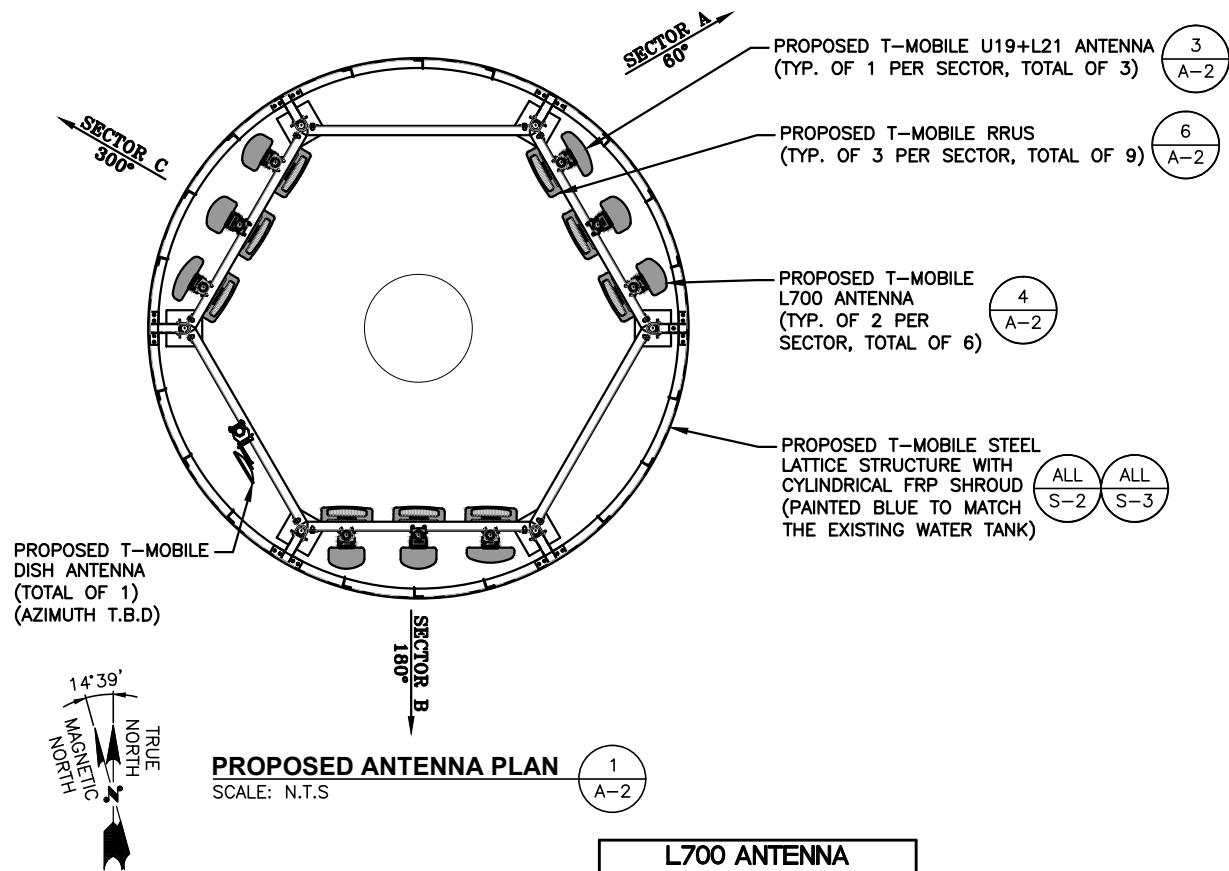
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EQUIPMENT PLAN &  
ELEVATION

SHEET NUMBER

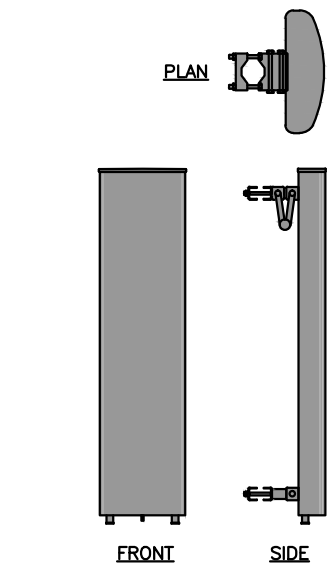
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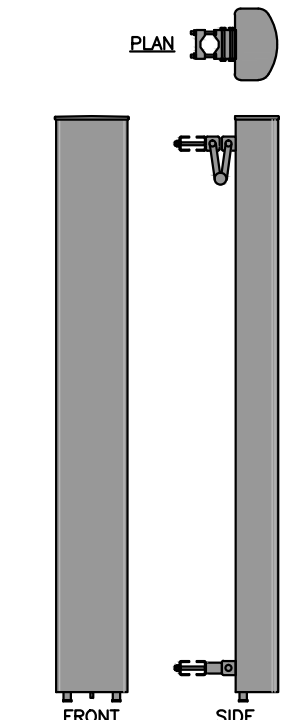


U19+L21 ANTENNA DIMENSIONS	
MODEL #	CMA-BDHH/6521/E0-6/RMU/TB05
MANUF.	CELLMAX
WIDTH	14.7"
DEPTH	5.2"
HEIGHT	81.1"
WEIGHT	61.6 LBS

L700 ANTENNA DIMENSIONS	
MODEL #	LNx-6515DS-A1M
MANUF.	COMMScope
WIDTH	11.9"
DEPTH	7.1"
HEIGHT	96.6"
WEIGHT	43.7 LBS



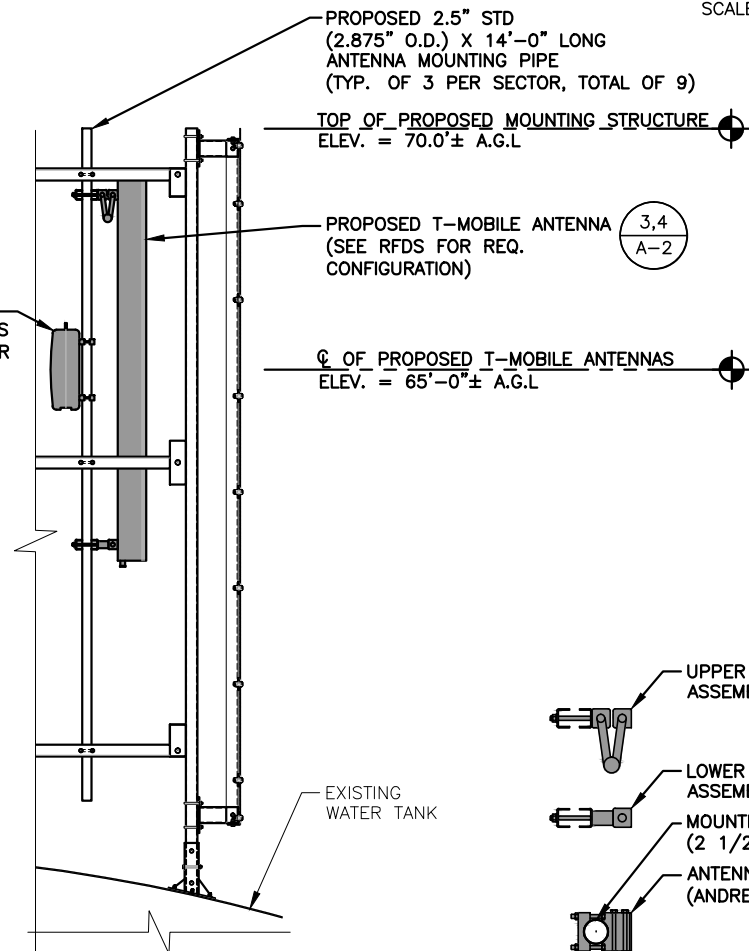
**U19+L21 ANTENNA DETAIL**  
SCALE: N.T.S.



**L700 ANTENNA DETAIL**  
SCALE: N.T.S.

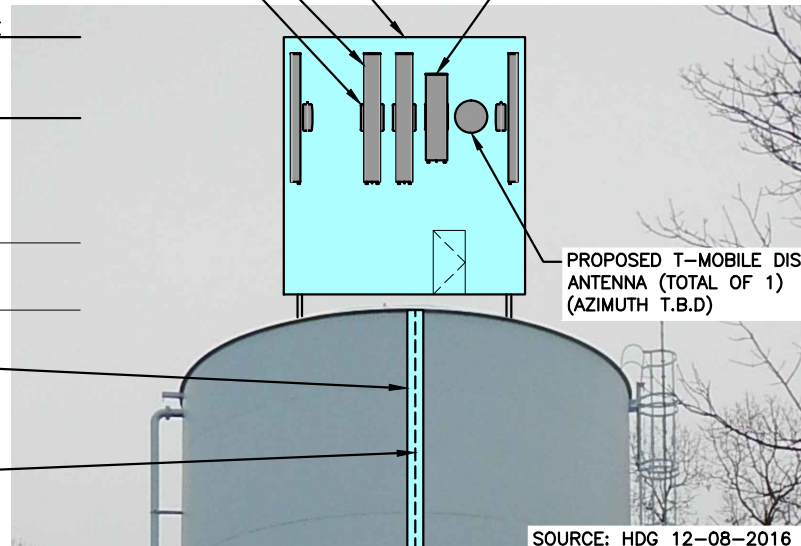
6  
A-2

PROPOSED T-MOBILE RRUS  
(TYP. OF 3 PER SECTOR, TOTAL OF 9)

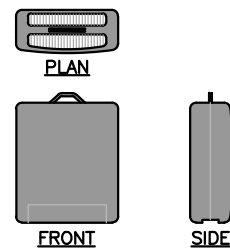


**PROPOSED ANTENNA & RRU MOUNTING DETAIL**  
SCALE: N.T.S.

- ALL S-2, ALL S-3: PROPOSED T-MOBILE STEEL LATTICE STRUCTURE WITH CYLINDRICAL FRP SHROUD (PAINTED BLUE TO MATCH THE EXISTING WATER TANK)
- 4 A-2: PROPOSED T-MOBILE L700 ANTENNA (TYP. OF 2 PER SECTOR, TOTAL OF 6)
- 6 A-2: PROPOSED T-MOBILE RRUS (TYP. OF 3 PER SECTOR, TOTAL OF 9)
- TOP OF PROPOSED MOUNTING STRUCTURE ELEV. = 70.0'± A.G.L.
- CL OF PROPOSED T-MOBILE ANTENNAS ELEV. = 65'-0"± A.G.L.
- TOP OF EXISTING WATERTANK DOME ELEV. = 55.0'± A.G.L.
- TOP OF EXISTING WATERTANK RIM ELEV. = 50.0'± A.G.L.
- ALL S-1: PROPOSED T-MOBILE VERTICAL CABLE TRAY (PAINTED BLUE TO MATCH THE EXISTING WATER TANK)
- PROPOSED (3) 1-5/8" HYBRID CABLE SYSTEM TRUNK & (1) 1/2" DISH ANTENNA COAX TO BE RUN INSIDE PROPOSED CABLE TRAY

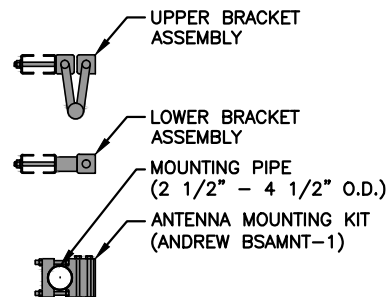


**PROPOSED ANTENNA MOUNT PHOTO DETAIL**  
SCALE: N.T.S.

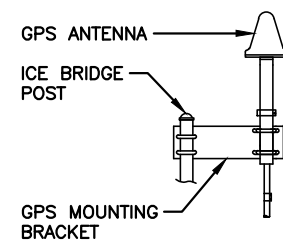


**PROPOSED RRU DETAIL**  
SCALE: N.T.S.

RRU DIMENSIONS	
MODEL #	RRUS11 B2
MODEL #	RRUS11 B4
MODEL #	RRUS11 B12
MANUF.	ERICSSON
WIDTH	17"
DEPTH	7"
HEIGHT	20"
WEIGHT	50.6 LBS



**ANTENNA MOUNTING BRACKET**  
SCALE: N.T.S.



**GPS ANTENNA MOUNTING DETAIL**  
SCALE: N.T.S.

GPS DIMENSIONS	
MODEL #	CCAH32ST03
MANUF.	NAIS
HEIGHT	3.9"
WIDTH	3.5"

**STRUCTURAL NOTES:**  
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: FEBRUARY 06, 2017 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

## T-MOBILE NORTHEAST LLC

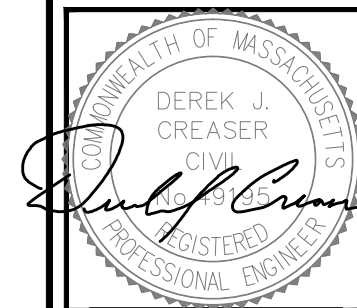
15 COMMERCE WAY, SUITE B  
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CHECKED BY: RP

APPROVED BY: DJC

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SITE NUMBER:

4WL0968A

SITE NAME:

LELAND HILL  
WATER TANK

SITE ADDRESS:

29 LELAND HILL ROAD  
GRAFTON, MA 01757  
WORCESTER COUNTY

SHEET TITLE

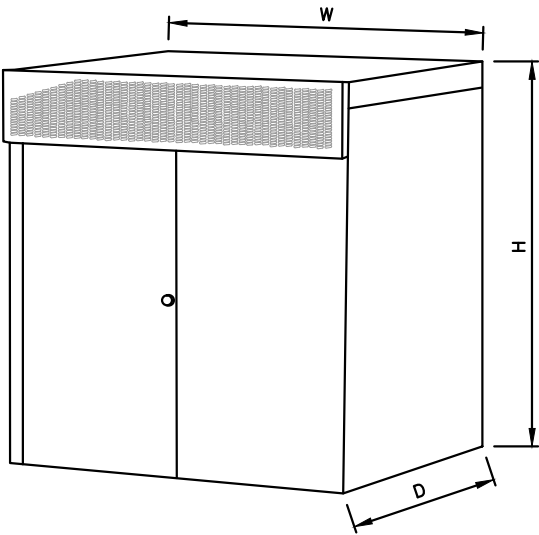
TOWER EQUIPMENT  
DETAILS

SHEET NUMBER

A-2



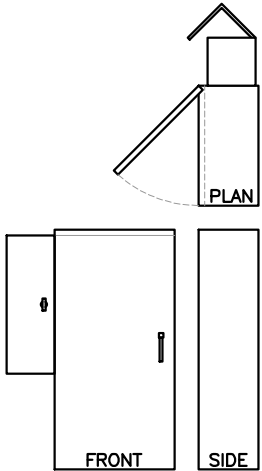
CABINET DIMENSIONS	
MODEL #	RBS 6102
MANUF.	ERICSSON
WIDTH	51.2"
DEPTH	27.6"
HEIGHT	57.1"
WEIGHT (W/O BACKUP BATTERIES)	728 LBS
CABINET CAN BE MOUNTED DIRECTLY TO SITE GROUND (INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES)	



PROPOSED 6102 EQUIPMENT CABINET  
SCALE: N.T.S.

1  
A-3

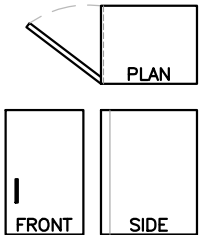
PPC DIMENSIONS	
MODEL #	CS2S2-W736
MANUF.	EMERSON
WIDTH	30"
DEPTH	10"
HEIGHT	66"
WEIGHT	150 LBS
NOTE: INSTALL CABINET ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	



POWER PROTECTION CABINET (PPC)  
SCALE: N.T.S.

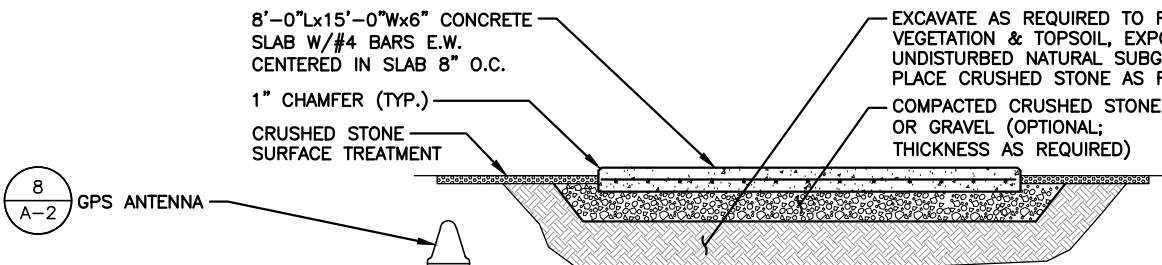
2  
A-3

RAC DIMENSIONS	
MODEL #	RAC24
MANUF.	PURCELL
WIDTH	15"
DEPTH	18.5"
HEIGHT	24"
WEIGHT	35 LBS
NOTE: 1. INSTALL CABINET ANCHORS AND FLOOR MOUNT KIT ANCHORS PER MANUFACTURER'S INSTALLATION GUIDELINES	



REMOTE ACCESS CABINET (RAC)  
SCALE: N.T.S.

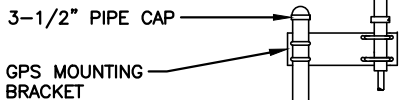
3  
A-3



NEW CONC. PAD NOTES:  
- REINF. W/ #4's @ 8" O.C. EA. WAY (MID-DEPTH).  
- REINF. SHALL BE ASTM A615-GRADE 60. SECURE IN PLACE.  
- REINFORCEMENT IN EQUIPMENT SLAB TO BE WELDED AND BONDED TO GROUND RING

CONCRETE PAD DETAIL  
SCALE: N.T.S.

4  
A-3

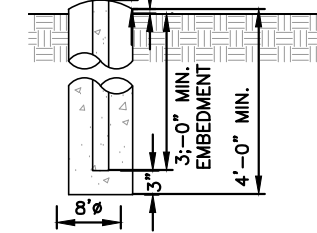


3-1/2" SCHEDULE 40 PIPE COLUMN, ANDREW P/N MF-130 OR EQUAL (LENGTH VARIES)

ANCHORED INTO CONCRETE EQUIPMENT PAD/TOWER/MONOPOLE FOUNDATION W/ 5/8" HILTI-KWIK BOLTS 4 TOTAL (6" MIN. EMBEDMENT)

12"x12"x1/2" PLATE (TYP.)  
PROPOSED CONCRETE PAD

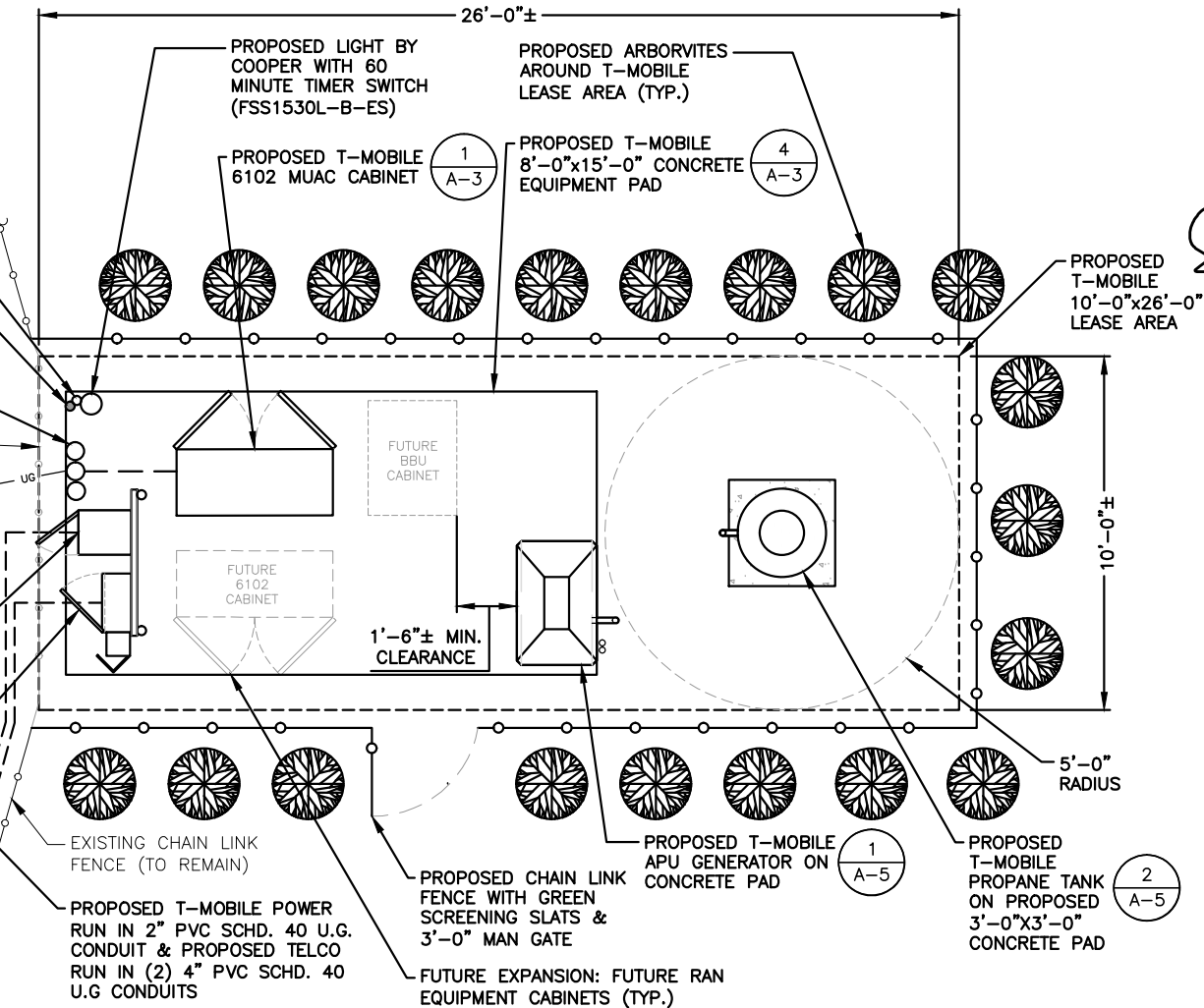
NOTE:  
ALL STEEL IS GALVANIZED. ALL BOLTS TO BE FURNISHED W/ WASHERS AND NUTS.



POST DETAIL  
SCALE: N.T.S.

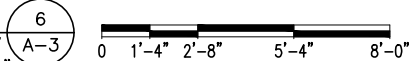
5  
A-3

- PROPOSED POST (TYP.)
- 5  
A-3  
PROPOSED T-MOBILE GPS ANTENNA MOUNTED TO PROPOSED POST
- PROPOSED (3) 6" CONDUIT STUB-UPS
- EXISTING 10'-0" OF CHAIN LINK FENCE SECTION (TO BE REMOVED)
- PROPOSED (3) 1-5/8" HYBRID CABLE SYSTEM TRUNK & (1) 1/2" DISH ANTENNA COAX IN PROPOSED (3) 6" U.G. CONDUITS
- 3  
A-3  
PROPOSED T-MOBILE RAC CABINET MOUNTED TO PROPOSED H-FRAME
- 2  
A-3  
PROPOSED T-MOBILE PPC CABINET MOUNTED TO PROPOSED H-FRAME



NOTES:  
THE PROPOSED 8'-0"x15'-0" CONCRETE PAD WILL BE EXCAVATED DOWN 1'-0" (120 CU. FT.), THE 3'-0"x3'-0" CONCRETE PAD WILL BE EXCAVATED DOWN 1'-0" (9 CU. FT.), AND THE (8) FENCE POSTS WILL BE EXCAVATED DOWN A MINIMUM OF 3'-0" (24 CU. FT.). THE TOTAL EARTH PROPOSED TO BE REMOVED SHALL BE 153 CU. FT.

EQUIPMENT PLAN  
22x34 SCALE: 3/8"=1'-0"  
11x17 SCALE: 3/16"=1'-0"



**T-MOBILE  
NORTHEAST LLC**

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**CENTERLINE  
COMMUNICATIONS**

95 RYAN DRIVE #1  
RAYNHAM, MA 02767

**HG  
HUDSON  
Design Group LLC**

45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

COMMONWEALTH OF MASSACHUSETTS  
DEREK J. CREASER  
CIVIL  
No. 49195  
REGISTERED  
PROFESSIONAL ENGINEER

CHECKED BY: RP  
APPROVED BY: DJC

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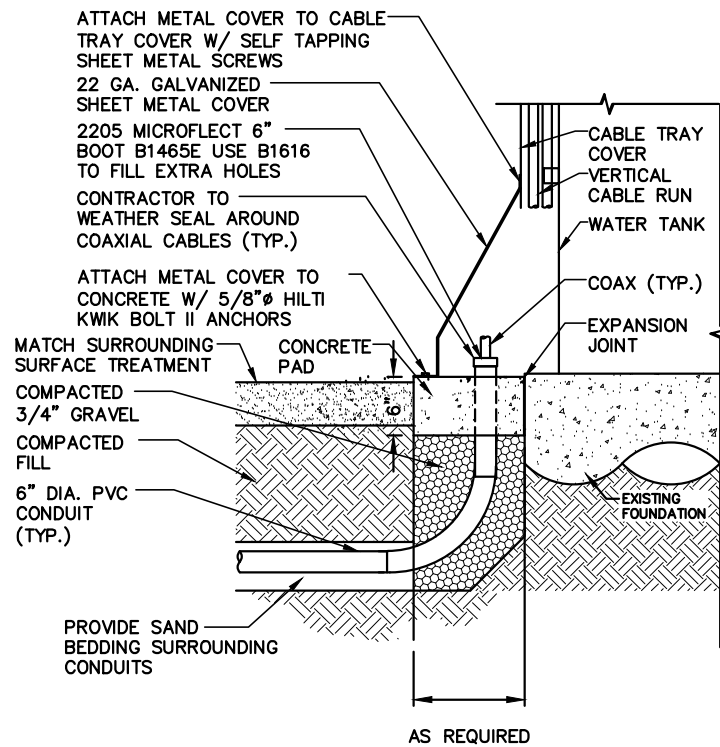
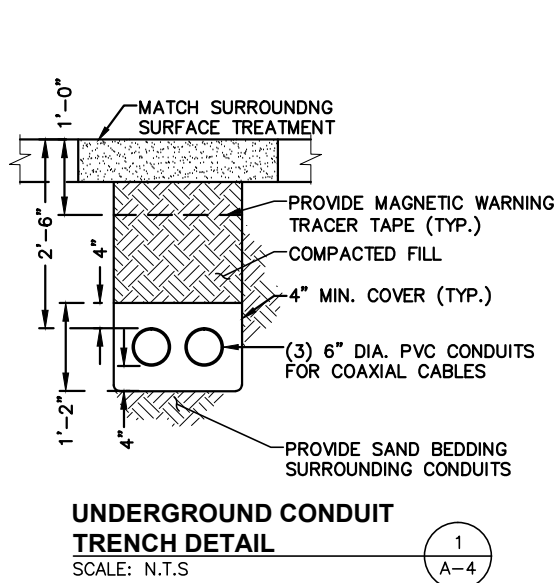
SITE NAME:  
LELAND HILL  
WATER TANK

SITE ADDRESS:  
29 LELAND HILL ROAD  
GRAFTON, MA 01757  
WORCESTER COUNTY

SHEET TITLE  
GROUND EQUIPMENT  
DETAILS

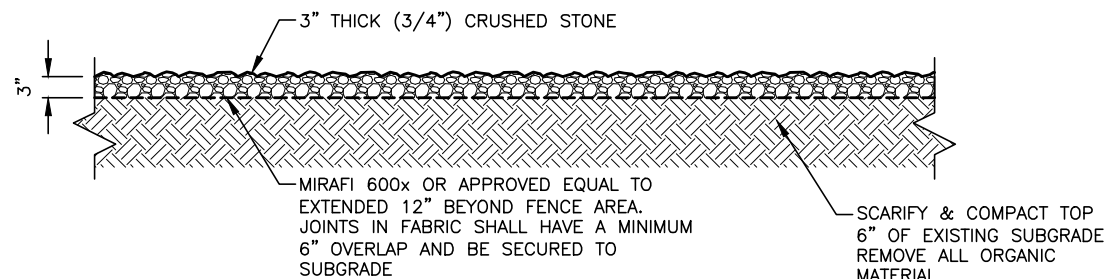
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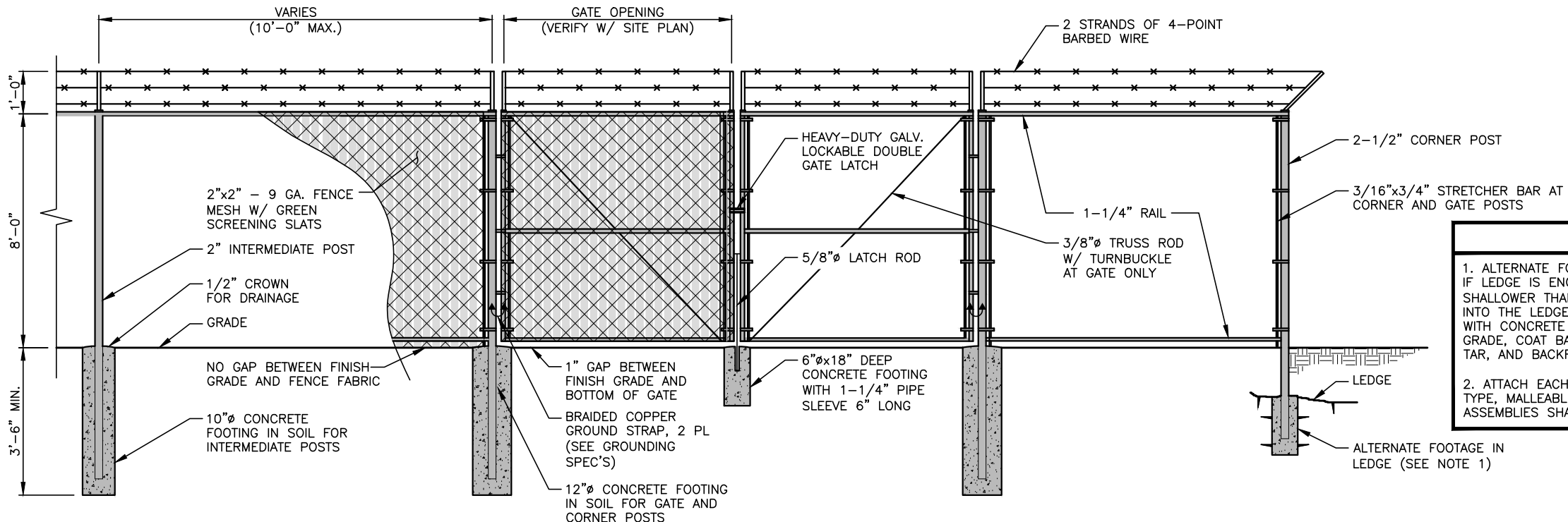


NOTES:  
1. STUB UP SIMILAR AT CABINETS WITHOUT SHEET METAL COVER.

**CONDUIT STUB UP DETAIL**  
SCALE: N.T.S.



**GRAVEL COMPOUND DETAIL**  
SCALE: N.T.S.



**CHAINLINK FENCE DETAIL**  
SCALE: N.T.S.

**FENCE NOTES**

1. ALTERNATE FOOTINGS FOR ALL FENCE POSTS IN LEDGE: IF LEDGE IS ENCOUNTERED AT GRADE, OR AT A DEPTH SHALLOWER THAN 3'-6", CORE DRILL AN 8" DIA HOLE 18" INTO THE LEDGE. CENTER POST IN THE HOLE AND FILL WITH CONCRETE OR GROUT. IF LEDGE IS BELOW FINISH GRADE, COAT BACKFILLED SECTION OF POST WITH COAL TAR, AND BACKFILL WITH WELL-DRAINING GRAVEL.

2. ATTACH EACH GATE WITH 1-1/2 PAIR OF NON-LIFT-OFF TYPE, MALLEABLE IRON OR FORGING, PIN-TYPE HINGES. ASSEMBLIES SHALL ALLOW FOR 180° OF GATE TRAVEL.

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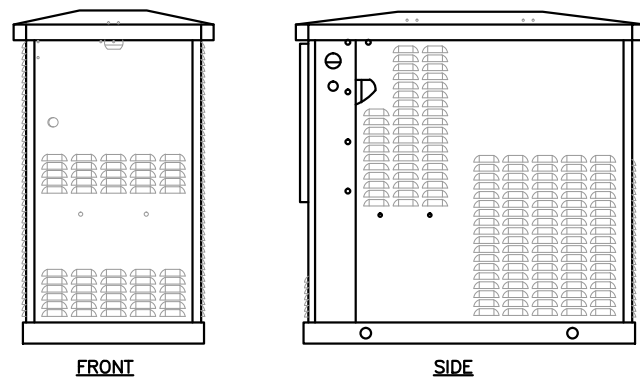
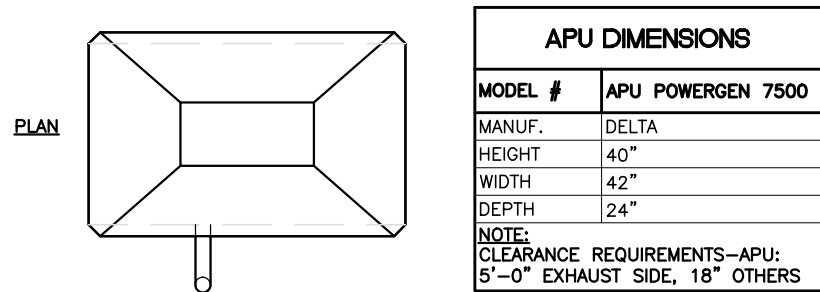
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DETAILS

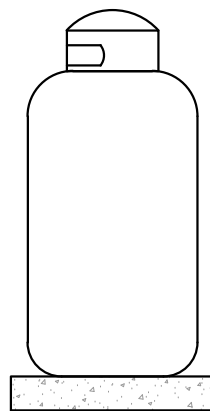
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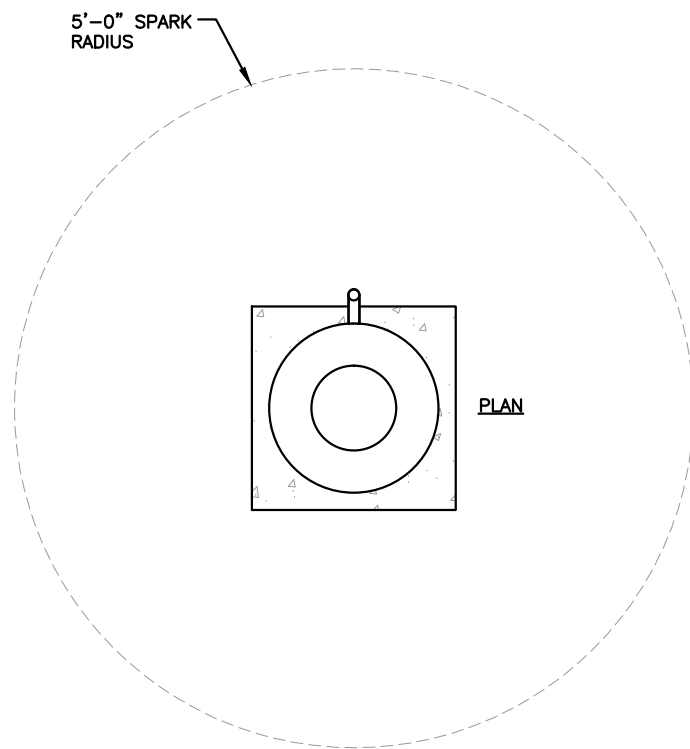


APU GENERATOR DETAIL 1  
SCALE: N.T.S. A-5

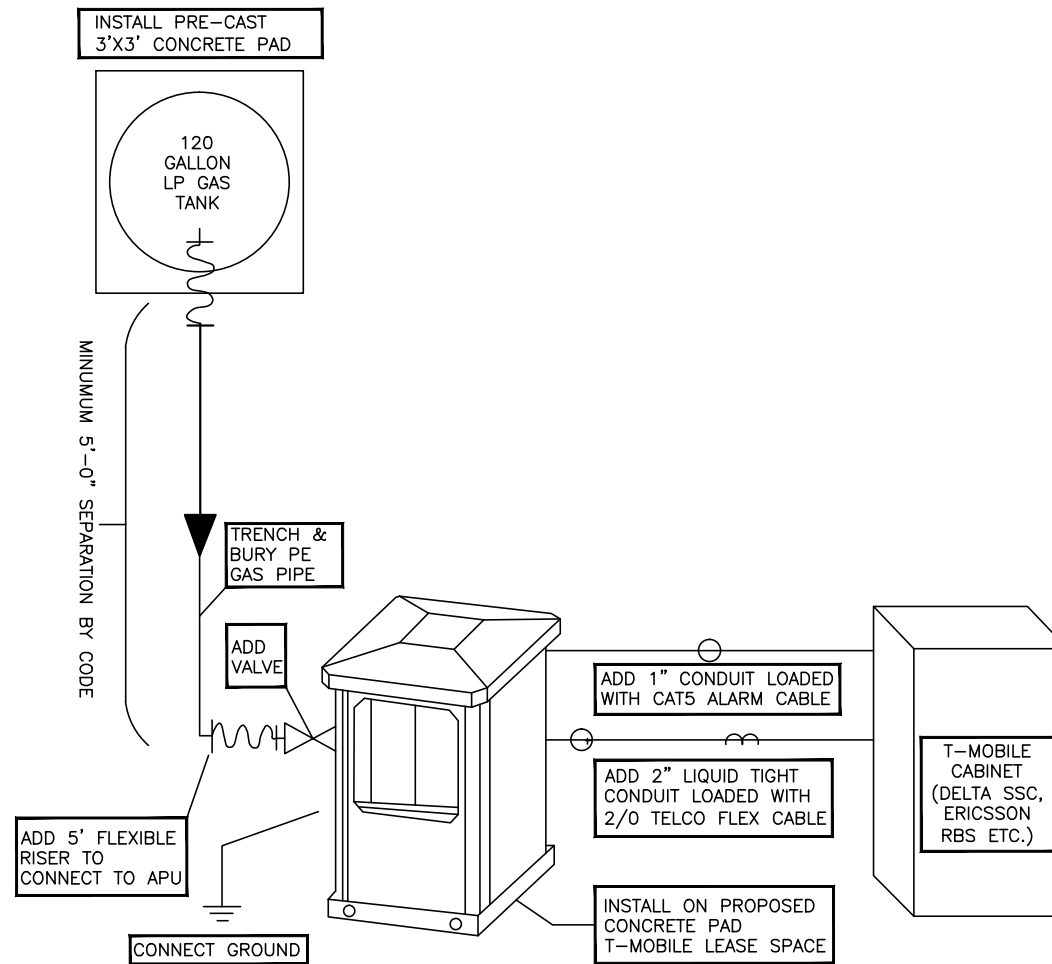
LP TANK DIMENSIONS	
HEIGHT	54"
DIAMETER	30"Ø
WEIGHT	260 LBS.
NOTE: CLEARANCE REQUIREMENTS-LP TANK: 5'-0" SPARK RADIUS WHERE AN INTEGRAL MANUAL SHUT-OFF VALVE IS INSTALLED	
80 HOURS RUNTIME-- AVERAGE 5Kw LOAD	



FRONT



LP PROPANE TANK DETAIL 2  
SCALE: N.T.S. A-5



APU & LP TANK ONE-LINE DIAGRAM 3  
SCALE: N.T.S. A-5

## T-MOBILE NORTHEAST LLC

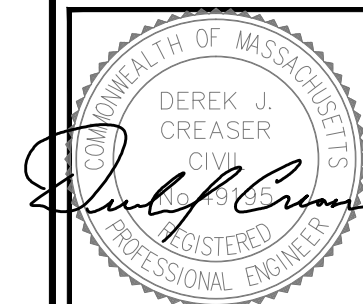
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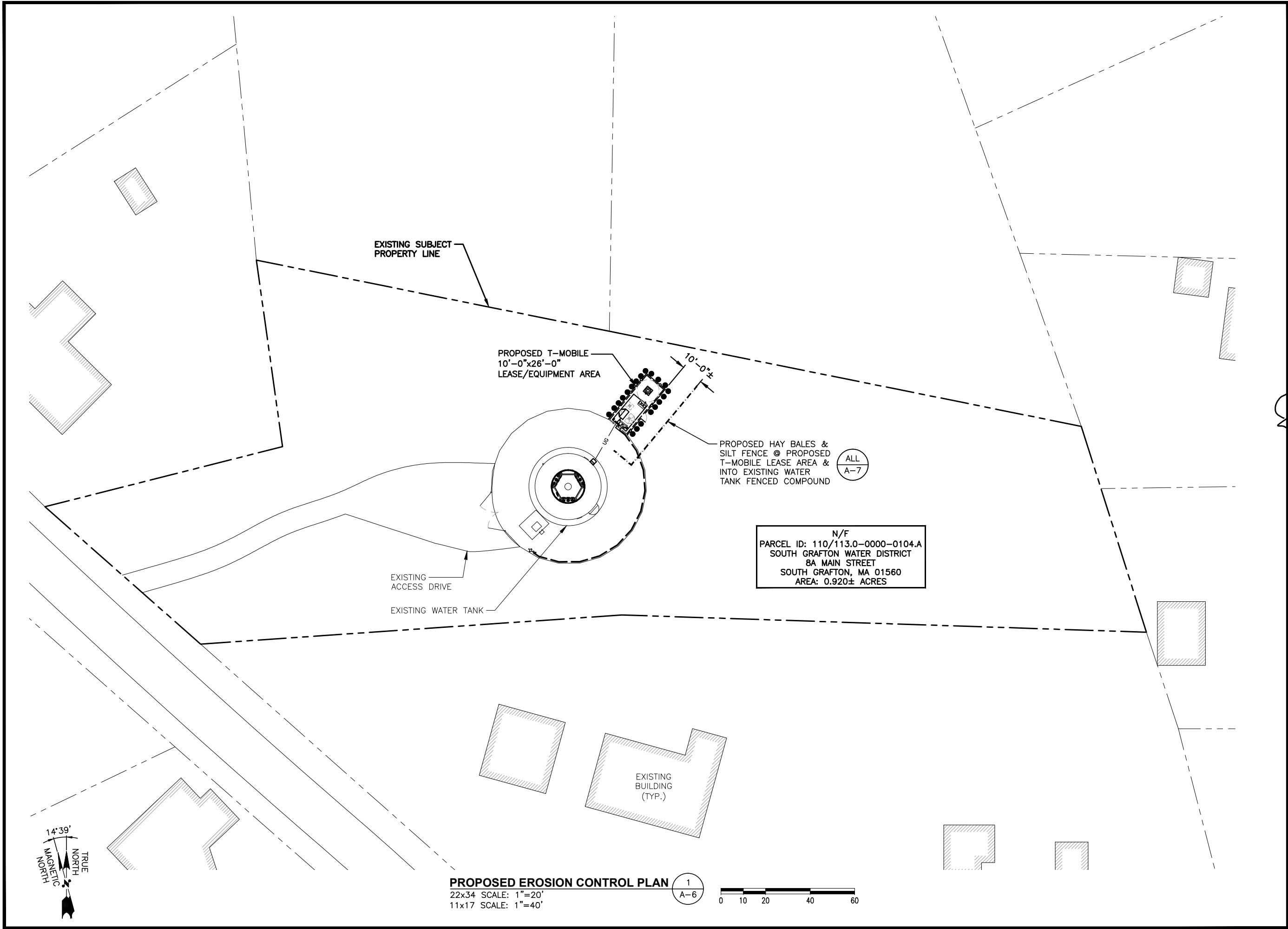
SHEET TITLE

AUXILIARY POWER  
DETAILS

SHEET NUMBER

A-5





## T-MOBILE NORTHEAST LLC

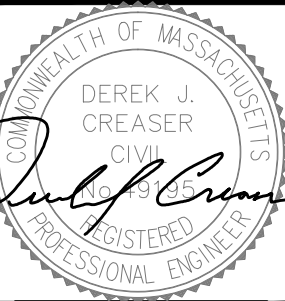
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WORCESTER COUNTY

SHEET TITLE

PROPOSED EROSION  
CONTROL PLAN

SHEET NUMBER

A-6



EROSION CONTROL

CONSTRUCTION SEQUENCE

1. NOTIFY THE TOWN INLAND WETLANDS AGENT AT LEAST ONE WEEK PRIOR TO THE PRE-CONSTRUCTION MEETING.
2. COMPLETE A "CALL BEFORE YOU DIG" PRIOR TO ANY ON SITE ACTIVITY. RECALL EVERY 30 DAYS.
3. INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
4. CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
5. WOOD CHIPS GENERATED FROM CLEARING ACTIVITIES MAY BE USED AS A TEMPORARY STABILIZATION MEASURE IN ADDITION TO SILT FENCING & HAY BALES.
6. INSTALL HAY BALES TO "BACK UP" SILTATION FENCE ALONG DOWNGRADIENT WETLANDS & RIVER BOUNDARIES.
7. EXCAVATE 3-INCH LAYER OF TOP SOIL/ORGANICS FROM WITHIN COMPOUND.
8. STOCKPILE EXCAVATED SOILS AS FAR AS POSSIBLE FROM ENVIRONMENTALLY SENSITIVE AREAS.
9. REMOVE ASPHALT TO LIMITS SHOWN ON PLAN.
10. EXCAVATE FOR ANY SUBSURFACE UTILITIES.
11. ESTABLISH SEDIMENT AND EROSION CONTROLS AROUND ANY STOCKPILE SOILS.
12. INSTALL UTILITY SERVICES.
13. INSTALL HAY BALE PROTECTION AT STORM DRAINAGE INLETS (AS APPLICABLE).
14. DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, REPAIR TEMPORARY SILT FENCES AND SEDIMENT TRAPS.
15. EXCAVATE FOR AND CONSTRUCT TOWER FOUNDATION AND CEMENT CONCRETE PADS
16. NO STORM FLOW SHALL BE ALLOWED TO ANY WETLANDS OR RIVERWAY.
17. INSTALL WEED CHECK FABRIC ON DRY, LEVEL SOIL.
18. COVER WEED CHECK FABRIC WITH 3-INCH LAYER OF WASHED GRAVEL (WITHIN COMPOUND)

IMPACT OF STORMWATER DURING CONSTRUCTION ACTIVITY

ALL SEDIMENT CONTROLS, INCLUDING SILTATION FENCES AND HAY BALES MUST BE INSPECTED WEEKLY OR IMMEDIATELY AFTER A STORMWATER RUNOFF GENERATING EVENT. ALL SEDIMENT CONTROLS MUST BE MAINTAINED IN AN EFFECTIVE CONDITION.

IN THE EVENT THAT STORMWATER WITH SEDIMENT IS FLOWING ONTO SURROUNDING PAVEMENT, FOLLOWING MUST BE PERFORMED:

1. ADDITIONAL MEASURES MUST BE TAKEN DURING TIMES OF RAIN OR FLOW. THESE INCLUDE THE CESSATION OF ALL CONSTRUCTION ACTIVITY AT TIMES OF "HEAVY RAIN" OR "SIGNIFICANT FLOW" WHICH HAVE THE POTENTIAL TO CAUSE SOIL TRANSPORT.

CONSTRUCTION SPECIFICATION – SILT FENCE:

1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID-SECTION AND BOTTOM.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED.
6. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
7. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BULGES IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE – SILT FENCE

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACHED APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.
5. REMOVE ALL SEDIMENTATION CONTROLS AFTER SOIL IS STABILIZED.

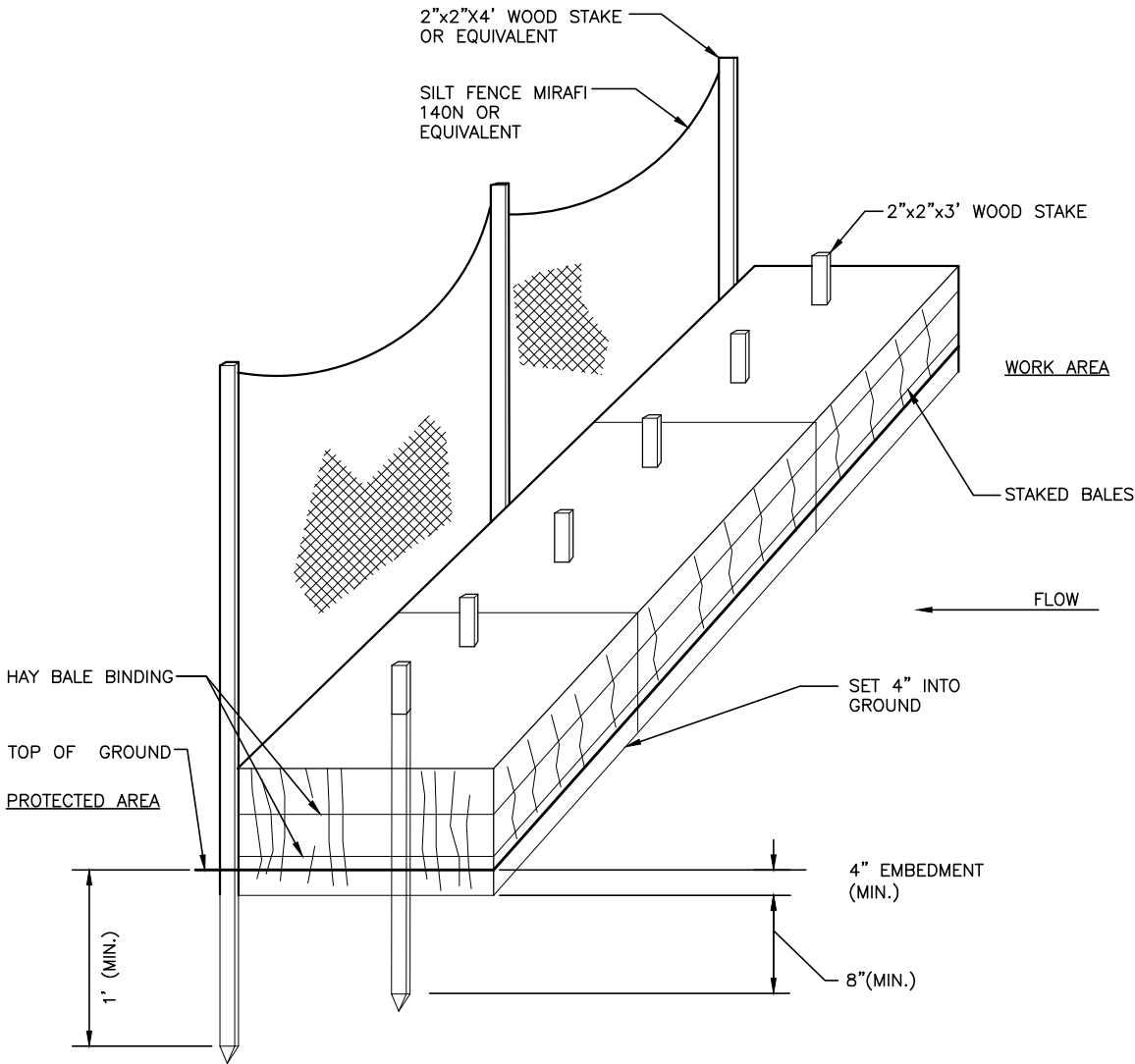
EROSION CONTROL MEASURES:

1. DISTURBED AREAS SHALL BE KEPT TO THE MINIMUM AREA NECESSARY TO CONSTRUCT THE ROADWAYS AND ASSOCIATED DRAINAGE FACILITIES.
2. HAY BALE BARRIERS AND SEDIMENT TRAPS SHALL BE INSTALLED AS REQUIRED. BARRIERS AND TRAPS ARE TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
3. BALED HAY AND MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE FROM NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY. NO SALT HAY SHALL BE USED.
4. FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
5. STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SILTATION FENCE AND SEEDED TO PREVENT EROSION. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFF SITE.
6. ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4 INCHES OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA.
7. APPLICATION OF GRASS SEED, FERTILIZERS AND MULCH SHALL BE ACCOMPLISHED BY BROADCAST SEEDING OR HYDROSEEDING AT THE RATES OUTLINED BELOW:

LIMESTONE:	75-100 LBS./1,000 SQ FT
FERTILIZER:	RATE RECOMMENDED BY MANUFACTURER
MULCH:	HAY MULCH APPROXIMATELY 3 TON/ACRE UNLESS EROSION CONTROL MATTING IS USED
SEED MIX:	(SLOPES LESS THAN 4:1) LBS./ACRE
	CREeping RED FESCUE 20
	TALL FESCUE 20
	REDTOP 2
	42

(SLOPES GREATER THAN 4:1) LBS./ACRE
CREeping RED FESCUE 20
TALL FESCUE 20
BIRDSFOOT TREEFOIL 8
48

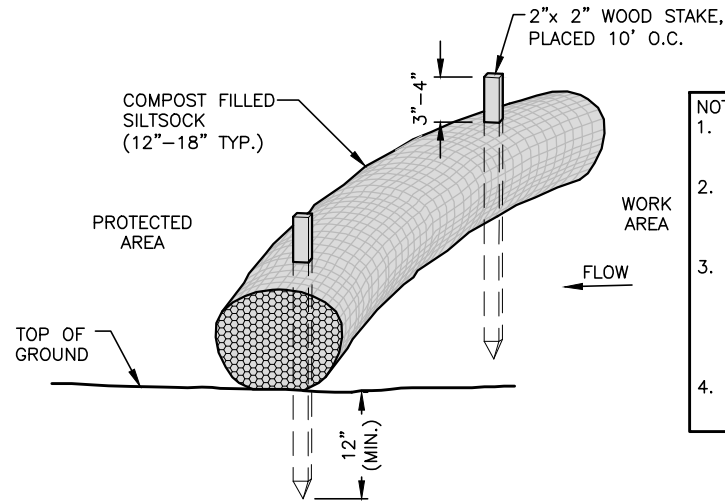
8. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED.
9. ALL CATCH BASIN INLETS WILL BE PROTECTED WITH LOW POINT SEDIMENTATION BARRIER.
10. ALL STORM DRAINAGE OUTLETS WILL BE STABILIZED AND CLEANED AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
11. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA.
12. NO DISCHARGE SHALL BE DIRECTED TOWARDS ANY PROPOSED DITCHES, SWALES, OR PONDS UNTIL THEY HAVE BEEN PROPERLY STABILIZED.



HAY BALES/ SILT FENCE DETAIL

SCALE: N.T.S

1  
A-7



SILT SOCK DETAIL

SCALE: N.T.S

2  
A-7

- NOTES:
1. SILT SOCK SHALL BE FILTREXX SILT SOXX, OR APPROVED EQUAL.
  2. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.
  3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
  4. SEE SPECIFICATIONS FOR SOCK SIZE, AND COMPOST FILL, REQUIREMENTS.

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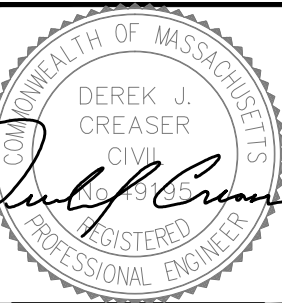


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CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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0	03/08/17	ISSUED FOR PERMITTING	VP/HH

SITE NUMBER:

4WL0968A

SITE NAME:

LELAND HILL  
WATER TANK

SITE ADDRESS:

29 LELAND HILL ROAD  
GRAFTON, MA 01757  
WORCESTER COUNTY

SHEET TITLE

EROSION CONTROL  
DETAILS & NOTES

SHEET NUMBER

A-7



STRUCTURAL NOTES

1.

DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE (IBC 2009), ASCE 7-05, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
2.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
3.

DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
4.

STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
5.

STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
6.

STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
7.

ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
8.

ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
9.

FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
10.

CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". 9TH EDITION.
11.

INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
12.

UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
13.

EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-20 AND OR HY-150 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
14.

EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
15.

LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
16.

WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
17.

ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
18.

NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
19.

SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTION CHECKLIST

BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	ENGINEER OF RECORD APPROVED SHOP DRAWINGS <sup>1</sup>
REQUIRED	MATERIAL SPECIFICATIONS REPORT <sup>2</sup>
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
REQUIRED	PACKING SLIPS <sup>3</sup>
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
REQUIRED	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE GROUT VERIFICATION
REQUIRED	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS <sup>3</sup>
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES

1.

REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
2.

PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
3.

PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
4.

HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
5.

AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES

1.

ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
2.

SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
3.

SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
4.

VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM.ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
5.

CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
6.

EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINT. ENGINEER OF RECORD TO APPROVE.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17)

**GENERAL:** WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER’S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

REQUIRED INSPECTIONS AND SITE REVIEW DOCUMENT AS A CONDITION OF THE BUILDING PERMIT THE FOLLOWING INSPECTIONS AND SITE REVIEWS IDENTIFIED BY THE BUILDING OFFICIAL ARE REQUIRED FOR WORK PER THE 8TH EDITION OF THE MASSACHUSETTS STATE BUILDING CODE, 780 CMR, SECTION 110 AND CHAPTER 17			
REQUIRED SITE REVIEW AND DOCUMENTATION FOR PORTIONS OR PHASES CONSTRUCTION <sup>1,6,7</sup> (TO BE PERFORMED BY THE APPROPRIATE REGISTERED DESIGN PROFESSIONAL OR HIS/HER DESIGNEE OR M.G.L.C 112 §81R CONTRACTOR)			
SITE REVIEW AND DOCUMENTATION	X	SITE REVIEW AND DOCUMENTATION	X
SOIL CONDITION/ANALYSIS/REPORT		ENERGY EFFICIENCY REQUIREMENTS	
FOOTING AND FOUNDATION (INCLUDING REINFORCEMENT AND FOUNDATION ATTACHMENT)		FIRE ALARM INSTALLATION <sup>2</sup>	
CONCRETE FLOOR AND UNDER FLOOR		FIRE SUPPRESSION INSTALLATION <sup>3</sup>	
LOWEST FLOOR FLOOD ELEVATION		FIELD REPORTS <sup>5</sup>	
STRUCTURAL FRAME – WALL/FLOOR/ROOF	X	CARBON MONOXIDE DETECTION SYSTEM <sup>4</sup>	
LATH AND PLASTER/GYPSUM		SEISMIC REINFORCEMENT	
FIRE RESISTANT WALL/PARTITIONS FRAMING		SMOKE CONTROL SYSTEMS	
FIRE RESISTANT WALL/PARTITIONS FINISH ATTACHMENTS		SMOKE AND HEAT VENTS	
ABOVE CEILING INSPECTION		ACCESSIBILITY (521 CMR)	
FIRE BLOCKING/STOPPING SYSTEM		OTHER:	
EMERGENCY LIGHTING/EXIT SIGNAGE			
MEANS OF EGRESS COMPONENTS		SPECIAL INSPECTIONS (SECTION 1704):	X
ROOFING, COPING/SYSTEM			
VENTING SYSTEMS (KITCHEN, CHEMICAL, FUME)			
MECHANICAL SYSTEMS			

1.

IT IS THE RESPONSIBILITY OF THE PERMIT APPLICANT TO NOTIFY THE BUILDING OFFICIAL OF REQUIRED INSPECTIONS (X). INSPECTION OF 780 CMR FIRE PROTECTION SYSTEMS MAY BE WITNESSED BY THE FIRE OFFICIAL AND INSTALLATION PERMITS ARE REQUIRED FROM THE FIRE DEPARTMENT PER 527 CMR.
2.

INCLUDE NFPA 72 TEST AND ACCEPTANCE DOCUMENTATION
3.

INCLUDE APPLICABLE NFPA 13, 13R, 13D, 14, 15, 17, 20, 241, ETC. – TEST AND ACCEPTANCE DOCUMENTATION
4.

INCLUDE NFPA 720 RECORD OF COMPLETION AND INSPECTION AND TEST FORM
5.

INCLUDE FIELD REPORTS AND RELATED DOCUMENTATION
6.

WORK SHALL NOT PROCEED, OR BE CONCEALED, UNTIL THE REQUIRED INSPECTION HAS BEEN APPROVED BY THE BUILDING OFFICIAL, AND NOTHING WITHIN CONSTRUCTION CONTROL SHALL HAVE THE EFFECT OF WAIVING OR LIMITING THE BUILDING OFFICIAL’S AUTHORITY TO ENFORCE THIS CODE WITH RESPECT TO EXAMINATION OF THE CONTRACT DOCUMENTS, INCLUDING PLANS, COMPUTATIONS AND SPECIFICATIONS, AND FIELD INSPECTIONS.
7.

ROUGH AND/OR FINISH INSPECTIONS OF ELECTRICAL, PLUMBING, OR SHEET METAL SHALL BE INSPECTED PRIOR TO ROUGH AND FINISH INSPECTIONS BY THE BUILDING OFFICIAL.

MASSACHUSETTS AMENDMENTS TO THE IBC (REFERENCE 780 CMR)

**107.6** CONSTRUCTION CONTROL.  
**107.6.1** GENERAL. THIS SECTION SHALL APPLY TO THE CONSTRUCTION CONTROLS, PROFESSIONAL SERVICES AND CONTRACTOR SERVICES REQUIRED FOR BUILDINGS AND STRUCTURES NEEDING REGISTERED DESIGN PROFESSIONAL SERVICES. THE FOLLOWING STRUCTURES ARE EXEMPT FROM THE REQUIREMENTS OF THIS SECTION: ANY BUILDING CONTAINING LESS THAN 35,000 CUBIC FEET OF ENCLOSED SPACE, MEASURED TO THE EXTERIOR SURFACES OF WALLS AND ROOFS AND TO THE TOP OF A GROUND SUPPORTED FLOOR, OR IN THE CASE OF A CRAWL SPACE, TO THE BOTTOM SURFACE OF THE CRAWL SPACE. IN THE CASE OF BASEMENT FLOORS OR LEVELS, THE CALCULATION OF ENCLOSED SPACE SHALL INCLUDE SUCH SPACES. FOR ADDITIONS TO EXISTING BUILDINGS, THE VOLUME OF ENCLOSED SPACE SHALL INCLUDE THE ENTIRE EXISTING BUILDING AND ALL PROPOSED ADDITIONS.  
1. ANY ONE OR TWO FAMILY DWELLING OR ANY ACCESSORY BUILDING THERETO.  
2. ANY BUILDING USED EXCLUSIVELY FOR AGRICULTURAL PURPOSES. SEE APPENDIX C FOR OCCUPANCY AND OTHER LIMITATIONS.  
3. RETAINING WALLS LESS THAN TEN FEET IN HEIGHT AT ALL POINTS ALONG THE WALL AS MEASURED FROM THE BASE OF THE FOOTING TO THE TOP OF THE WALL.

NOTWITHSTANDING THESE EXEMPTIONS, PROFESSIONAL ENGINEERING SERVICES SHALL BE REQUIRED FOR ACTIVITIES WHICH ARE DEEMED TO CONSTITUTE THE PRACTICE OF ENGINEERING AS DEFINED IN M.G.L. C. 112, § 81D, EXCEPT AS PROVIDED IN M.G.L. C. 54A AND ANY LEGALLY REQUIRED PROFESSION OR AS PROVIDED IN M.G.L. C. 112, § 81R. WHERE WORK IS PERFORMED BY LICENSED TRADES PEOPLE PURSUANT TO M.G.L. C. 112, § 81R, PLANS AND SPECIFICATIONS PREPARED TO DOCUMENT THAT WORK SHALL NOT BE REQUIRED TO BEAR THE SEAL OR SIGNATURE OF A REGISTERED DESIGN PROFESSIONAL.

**107.6.1.1** SPECIALIZED STRUCTURES. TELECOMMUNICATION TOWERS, WIND TURBINE TOWERS, AND SIMILAR STRUCTURES ARE ENGINEERED STRUCTURES AND SHALL BE SUBJECT TO THE REQUIREMENTS OF SECTION 107.6.

**107.6.2.2** CONSTRUCTION. THE REGISTERED DESIGN PROFESSIONALS WHO ARE RESPONSIBLE FOR THE DESIGN, PLANS, CALCULATIONS, AND SPECIFICATIONS, THEIR DESIGNEE OR THE REGISTERED DESIGN PROFESSIONALS WHO HAVE BEEN RETAINED FOR CONSTRUCTION PHASE SERVICES, SHALL PERFORM THE FOLLOWING TASKS:  
1. REVIEW, FOR CONFORMANCE TO THIS CODE AND THE DESIGN CONCEPT, SHOP DRAWINGS, SAMPLES AND OTHER SUBMITTALS BY THE CONTRACTOR IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS.  
2. PERFORM THE DUTIES FOR REGISTERED DESIGN PROFESSIONALS IN CHAPTER 17.  
3. BE PRESENT AT INTERVALS APPROPRIATE TO THE STAGE OF CONSTRUCTION TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF THE WORK AND TO DETERMINE IF THE WORK IS BEING PERFORMED IN A MANNER CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND THIS CODE.

THE PERMIT APPLICATION SHALL NOT BE DEEMED COMPLETED UNTIL ALL OF THE CONSTRUCTION DOCUMENTS REQUIRED BY THIS CODE HAVE BEEN SUBMITTED. DOCUMENTATION INDICATING THAT WORK COMPLIES WITH THE PLANS AND SPECIFICATIONS SHALL BE PROVIDED AT THE COMPLETION OF EACH PHASE WHEN REQUIRED BY THE BUILDING OFFICIAL.

**107.6.3** CONSTRUCTION CONTRACTOR SERVICES. THE ACTUAL CONSTRUCTION OF THE WORK SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AS IDENTIFIED ON THE APPROVED BUILDING PERMIT AND SHALL INVOLVE THE FOLLOWING:  
1. EXECUTION OF ALL WORK IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.  
2. EXECUTION AND CONTROL OF ALL METHODS OF CONSTRUCTION IN A SAFE AND SATISFACTORY MANNER IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL STATUTES AND REGULATIONS.  
3. UPON COMPLETION OF THE CONSTRUCTION, CERTIFICATION IN WRITING TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE THAT, TO THE BEST OF THE CONTRACTOR’S KNOWLEDGE AND BELIEF, CONSTRUCTION HAS BEEN DONE IN SUBSTANTIAL ACCORD WITH SECTION 107.6 AND WITH ALL PERTINENT DEVIATIONS SPECIFICALLY NOTED. THE BUILDING OFFICIAL MAY REQUIRE A COPY OF THIS CERTIFICATION.


**107.6.4** ON SITE PROJECT REPRESENTATION. WHEN APPLICATIONS FOR UNUSUAL DESIGNS OR MAGNITUDE OF CONSTRUCTION ARE FILED, OR WHERE REFERENCE STANDARDS REQUIRE SPECIAL ARCHITECTURAL OR ENGINEERING INSPECTIONS, THE BUILDING OFFICIAL MAY REQUIRE FULLTIME PROJECT REPRESENTATION BY A REGISTERED ARCHITECT OR PROFESSIONAL ENGINEER IN ADDITION TO THAT PROVIDED IN SECTION 107.6. THE PROJECT REPRESENTATIVE SHALL KEEP DAILY RECORDS AND SUBMIT REPORTS AS MAY BE REQUIRED BY THE BUILDING OFFICIAL. UPON COMPLETION OF THE WORK, THE REGISTERED DESIGN PROFESSIONAL SHALL FILE A FINAL REPORT INDICATING THAT THE WORK HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPROVED PLANS AND THIS CODE. THIS ON SITE PROJECT REPRESENTATION REQUIREMENT SHALL BE DETERMINED PRIOR TO THE ISSUANCE OF THE BUILDING PERMIT AND SHALL BE A REQUISITE FOR THE PERMIT ISSUANCE. REFUSAL BY THE APPLICANT TO PROVIDE SUCH SERVICE SHALL RESULT IN THE DENIAL OF THE PERMIT. ALL FEES AND COSTS RELATED TO THE PERFORMANCE OF ONSITE PROJECT REPRESENTATION SHALL BE BORNE BY THE OWNER.

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COMMUNICATIONS

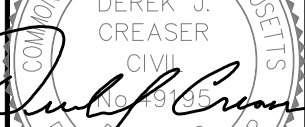
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COMMONWEALTH OF MASSACHUSETTS  
DEREK J. CREASER  
CIVIL  
No. 49195  
REGISTERED  
PROFESSIONAL ENGINEER



CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS			
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SITE NUMBER:  
4WL0968A

SITE NAME:  
LELAND HILL  
WATER TANK

SITE ADDRESS:  
29 LELAND HILL ROAD  
GRAFTON, MA 01757  
WORCESTER COUNTY

SHEET TITLE  
SPECIAL  
INSPECTIONS NOTES

SHEET NUMBER  
SN-1



GENERAL:

- 1.WELDING STUDS SHALL BE FLANGED THREADED STAINLESS STEEL CONFORMING TO ASTM A-276 OR A-493 SPECIFICATIONS. ALL STUDS SHALL BE 3/8" DIAMETER BY 1-3/4" LONG, UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
- 2.STUDS MUST BE WELDED BY THE CAPACITOR DISCHARGE METHOD, NELSON NCD 100 SYSTEM, AS MANUFACTURED AND MARKETED BY NELSON STUD WELDING, ELYRIA OHIO, (800) 635-9353 OR (440) 329-0400, OR APPROVED EQUAL. FILLET WELDS ARE NOT ACCEPTABLE.
- 3.CONTRACTOR SHALL RECEIVE IN WRITING THE OWNERS REQUIREMENTS FOR TANK INSPECTIONS PRIOR TO COMMENCING WITH THE WORK ON THE TANK. UPON THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A WRITTEN RELEASE FROM THE OWNER STATING THAT ALL WORK WAS PERFORMED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND THE OWNERS WRITTEN REQUIREMENTS AND RELEASES ALL LIABILITY TO THE CONTRACTOR, THE ENGINEER, THE APPLICANT, AND THE STUD MANUFACTURER.
- 4.CONTRACTOR SHALL COMPLY WITH AWS D1.1 AND AWS C5.4 FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". CONTRACTOR SHALL ADHERE TO AWS RECOMMENDED "SAFE PRACTICES FOR WELDING".
- 5.WELDING PARAMETERS, MACHINE POWER AND DWELL TIME SHALL BE QUALIFIED FOR THE WELDING POSITION, MATERIAL THICKNESS AND STUD SIZE TO BE USED. IF CHANCES IN THE SET-UP OCCUR AS DEFINED IN AWS D1.1, THE PROCEDURE MUST BE REQUALIFIED. CONTRACTOR SHALL SUBMIT CERTIFICATION OF WELDERS FOR STUD WELDING TO THE ENGINEER PRIOR TO COMMENCEMENT OF THE WORK.

SURFACE PREPARATION

- 1.CLEANING PROCEDURES SHALL BE VERIFIED AS MEETING THE MINIMUM REQUIREMENTS PER THE AWS WELDING HANDBOOK, VOLUME 2, "QUALITY CONTROL AND INSPECTION" FOR STUD WELDING, IF THE EXISTING COATING SYSTEM CONTAINS LEAD OR OTHER POTENTIALLY HAZARDOUS MATERIALS, SPECIAL PROCEDURES FOR REMOVAL AND DISPOSAL WILL BE REQUIRED.
- 2.PREPARE SURFACE TO BE WELDED BY SPOT REMOVING PAINT TO BARE METAL USING POWER BRUSHING IN ACCORDANCE WITH SSPC-SP11, (STEEL STRUCTURES PAINTING COUNCIL, SSPC-VIS 1-671). USE A 3M STRIP-N-CLEAN FLEXIBLE WHEEL OR APPROVED EQUAL. A WIRE WHEEL IS NOT ACCEPTABLE.
- 3.FOLLOW POWER TOOL CLEANING WITH A NON-FLAMMABLE SOLVENT CLEANING TO REMOVE ANY OILS, CONTAMINANTS, RUST OR DIRT PRIOR TO STUD WELDING. (SSPC-SP1 BY STEEL STRUCTURES PAINTING COUNCIL, SSPC-VIS 1-671)

STUD QUALIFICATION TESTING AND SAMPLING

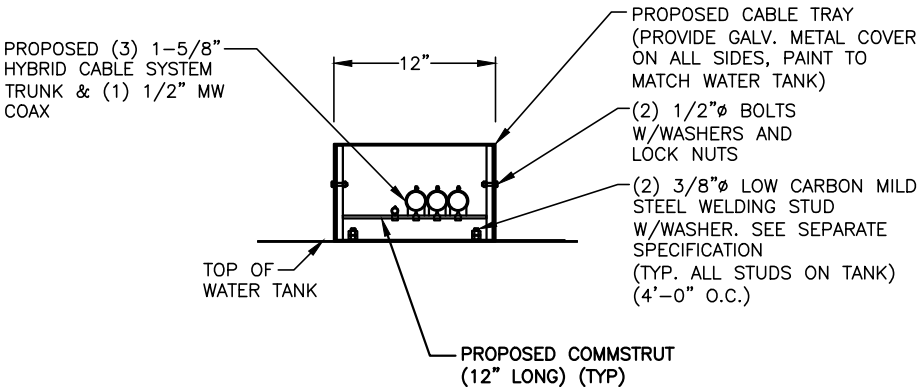
- 1.THE QUALIFICATION OF STUD APPLICATION AND PRE-PRODUCTION TESTING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 7 "STUD WELDING" OF AWS D1.1 INITIAL QUALIFICATION TESTING SHALL BE PERFORMED UNDER INSPECTION BY THE ENGINEER.
- 2.STUD APPLICATION SHALL BE QUALIFIED BY STUD WELDING TEN (10) SPECIMENS CONSECUTIVELY TO ASTM A-36 STEEL BASE MATERIALS USING RECOMMENDED PROCEDURES AND SETTINGS FOR EACH DIAMETER, POSITION, AND SURFACE GEOMETRY. THE TEN SPECIMENS SHALL BE TORQUE TESTED TO FAILURE. STUD APPLICATION SHALL BE CONSIDERED QUALIFICATION IF ALL TEST SPECIMENS ARE TORQUED TO DESTRUCTION WITHOUT FAILURE IN THE WELD. IN ADDITION, PRIOR TO PRODUCTION, CONTRACTOR SHALL PREPARE SIX (6) STUD WELDED SAMPLES USING A-36 STEEL PLATES AT THICKNESS EQUAL TO EACH OF THE PLATE THICKNESS OF THE WATER TANK TO BE WELDED TO. THE SIDE OPPOSITE THE STUD WELD SHALL HAVE A SIMILAR COATING (MINIMUM DFT-6MIL) TO THE EXISTING INTERIOR COATING OF THE WATER TANK. SAMPLES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- 3.BEFORE PRODUCTION, AT THE START OF EVERY SHIFT AND FOR EACH PARTICULAR SETUP, TESTING SHALL BE PERFORMED ON THE FIRST TWO STUDS THAT ARE WELDED. IN PLACE OF THE ACTUAL PRODUCTION STUD, TESTING MAY BE PERFORMED ON A MATERIAL SIMILAR TO THE PRODUCTION MEMBER IN THICKNESS AND PROPERTIES. TESTING SHALL INCLUDE A VISUAL EXAMINATION OF THE STUD WELD FOR A FULL 360 DEGREE FLASH. IN ADDITION, THE TEST SHALL INCLUDE TORQUE TESTING THE STUDS IN ACCORDANCE WITH THE FOLLOWING CRITERIA.

STUD DIAMETER (IN.)	TESTING TORQUE (FT. LB)	FASTENING TORQUE (FT. LB)
3/8 - 20 UNC	21.5	6.0

- 4.IF FAILURE OCCURS, THE PROCEDURE SHALL BE CORRECTED AND TWO MORE STUDS SHALL BE WELDED AND TESTED.
- 5.PRIOR TO PRODUCTION, CONTRACTOR SHALL PERFORM THREE (3) TEST WELDS ON THE WATER TANK IN A LOCATION SPECIFIED BY THE TANK OWNER TO VERIFY THAT NO DAMAGE WILL OCCUR TO THE COATING SYSTEM ON THE INTERIOR OF THE TANK. ANY AND ALL DAMAGE TO THE INTERIOR COATING SHALL BE REPAIRED TO THE OWNER'S SATISFACTION. IF DAMAGE DOES OCCUR, THE PROCEDURE SHALL BE REEVALUATED BY THE ENGINEER, CONSTRUCTION AUTHORIZED REPRESENTATIVE, AND OWNER BEFORE COMMENCING WITH THE WORK.

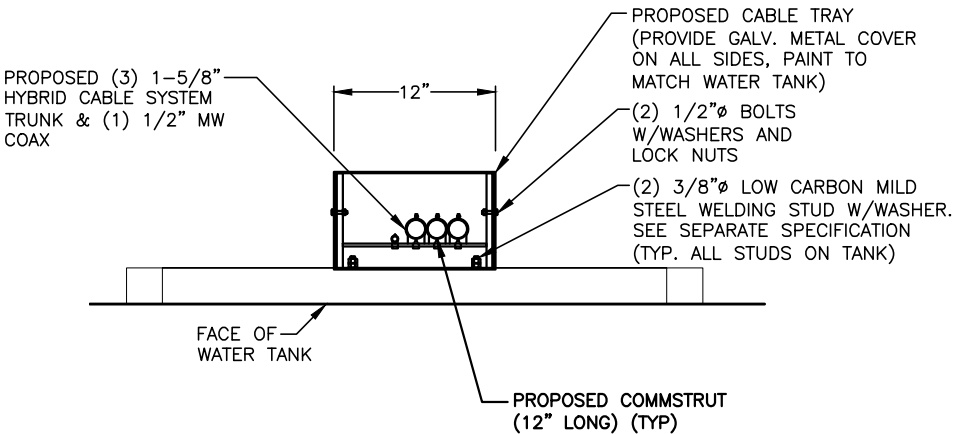
REPAINTING

- 1.ALL PAINTING SURFACES AFFECTED BY WELDING OPERATIONS SHALL BE REPAINTED TO MATCH ADJACENT EXISTING SURFACES. PAINTING SHALL INCLUDE COATING OF THE STUDS.
- 2.PRIOR TO REPAINTING, SURFACES SHALL BE SOLVENT CLEANED TO REMOVE ANY OILS, CONTAMINANTS, RUST OR DIRT PRIOR TO REPAINTING (SSPC-SP1 BY STEEL STRUCTURES PAINTING COUNCIL, SSPC-VIS 1-67T)
- 3.PAINT USED TO REPAIR INTERIOR COATING SHALL MATCH THE EXISTING COATING SYSTEM OF THE TANK OR SHALL BE A SIMILAR SYSTEM COMPATIBLE WITH THE EXISTING SYSTEM AND ACCEPTABLE TO THE OWNER. VERIFY EXISTING COATING SYSTEM WITH THE TANK OWNER.
- 4.EXTERIOR STEEL SHALL BE PAINTED WITH 1 COAT EPOXY PRIMER (DFT-5-7 IL) AND 2 COATS POLYURETHANE FINISH (DFT-4-5 MIL) WITH COLOR TO MATCH EXISTING SURFACE. PAINT SHALL BE AS MANUFACTURED BY SHERWIN WILLIAMS, CLEVELAND, OHIO 1-800-321-8194 OR EQUAL COATING TO MATCH EXISTING. CONTRACTOR SHALL VERIFY OWNER'S PAINT REQUIREMENTS PRIOR TO COMMENCEMENT OF THE WORK.
- 5.CONTRACTOR TO VERIFY COATING SYSTEMS ARE COMPATIBLE WITH THE EXISTING SYSTEMS BY ADHESION TESTING PER ASTM D3359 "MEASURING ADHESION BY TAPE TEST".
- 6.CONTRACTOR TO VERIFY THAT CANS OF THE PRODUCT ARE NOT BEYOND MANUFACTURER RECOMMENDED SHELF LIFE. ASSURE THROUGH MIXING OF PREMEASURED TWO COMPONENT COATING SYSTEMS.
- 7.SURFACE CLEANING SHALL BE FOLLOWED WITH PRIMER COAT ON THE SAME DAY.
- 8.PAINT MUST BE APPLIED AT SURFACE AND AMBIENT TEMPERATURES BETWEEN 50 DEGREES TO 120 DEGREES FAHRENHEIT. NO PAINTING SHALL BE DONE ABOVE 80% RELATIVE HUMIDITY. THE AMBIENT TEMPERATURE BEFORE THE START OF COATING APPLICATION MUST AT BE LEAST 5 DEGREES FAHRENHEIT ABOVE THE DEW POINT AS DETERMINED BY CONVENTIONAL ACCEPTED STANDARDS.
- 9.PAINT SHALL BE APPLIED USING A NATURAL BRISTLE BRUSH FOR A SMOOTH BRUSH FINISH.
- 10.PAINT SHALL BE FEATHERED OUT AT TIE-IN AREAS OF EXISTING COATING. PAINT SHALL BE WORKED IN AND AROUND IRREGULARITIES IN THE SURFACE.



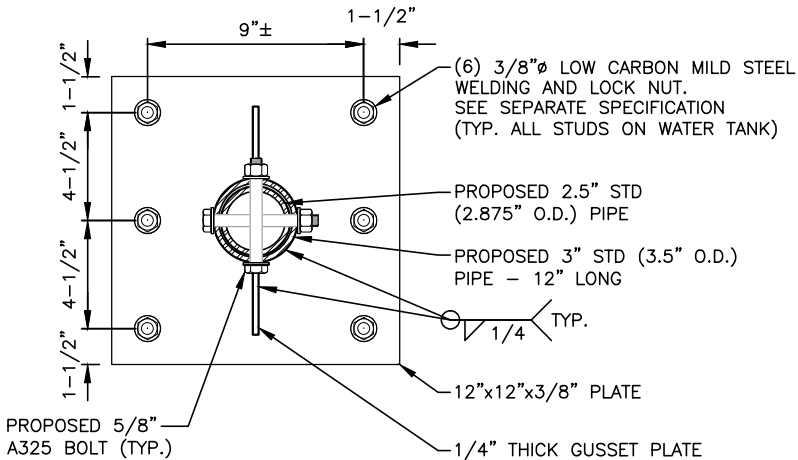
HORIZONTAL  
CABLE TRAY SECTION

SCALE: N.T.S



VERTICAL  
CABLE TRAY SECTION

SCALE: N.T.S



BASE PLATE

22x34 SCALE: 3"=1'-0"

11x17 SCALE: 1-1/2"=1'-0"

T-MOBILE  
NORTHEAST LLC

15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
OFFICE: (508) 286-2700  
FAX: (508) 286-2893

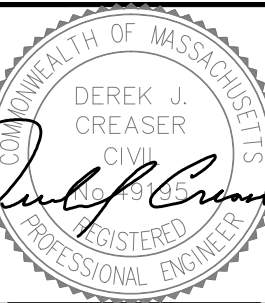


95 RYAN DRIVE #1  
RAYNHAM, MA 02767



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845

TEL: (978) 557-5553  
FAX: (978) 336-5586



CHECKED BY: RP

APPROVED BY: DJC

SUBMITTALS

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4WL0968A

SITE NAME:

LELAND HILL  
WATER TANK

SITE ADDRESS:

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GRAFTON, MA 01757  
WORCESTER COUNTY

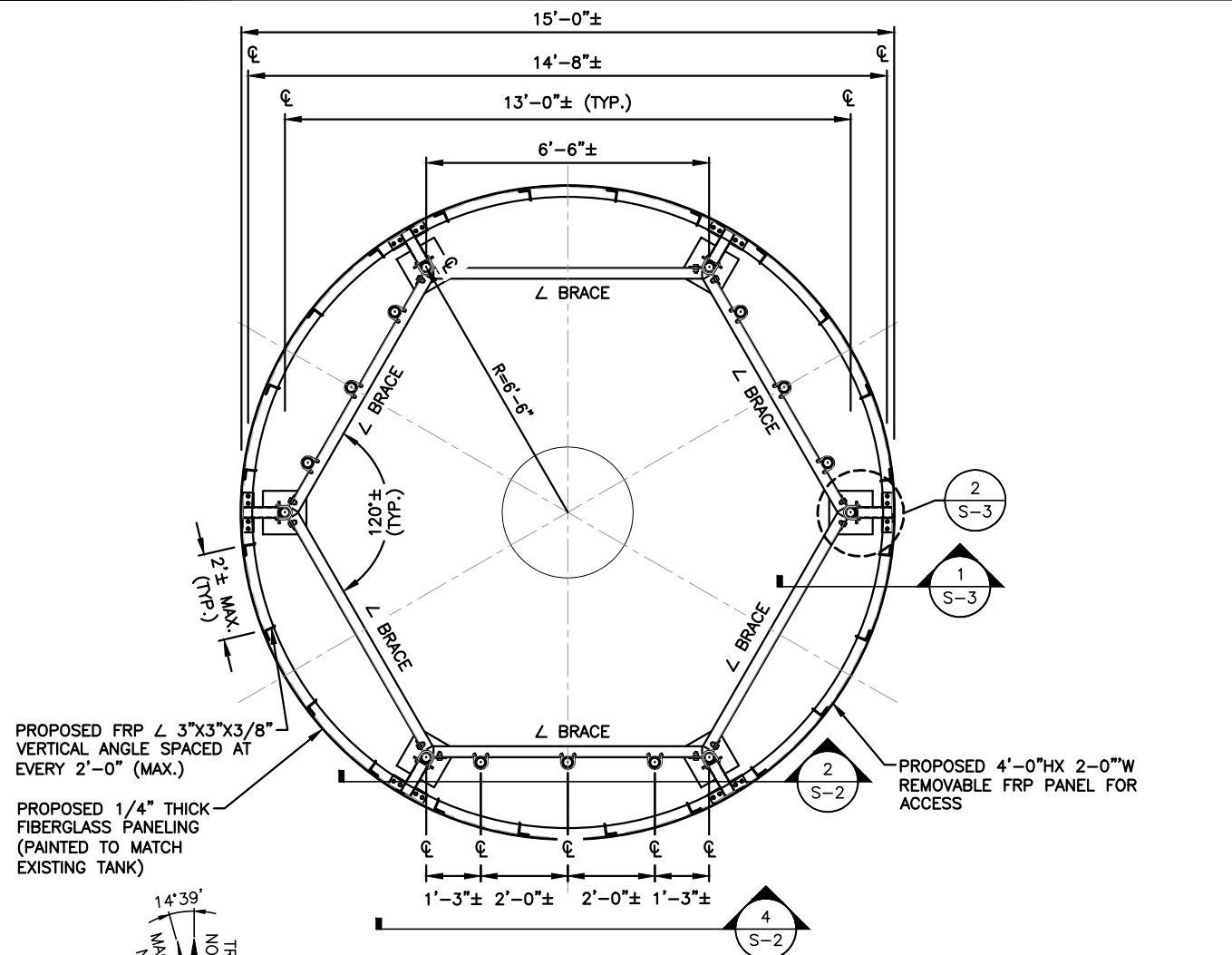
SHEET TITLE

CABLE TRAY &  
BASE PLATE DETAILS

SHEET NUMBER

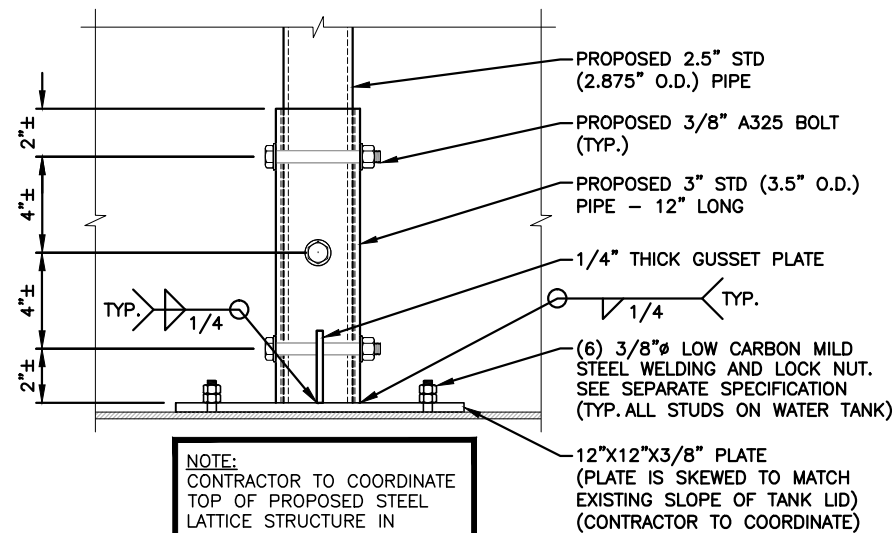
S-1





### STRUCTURAL PLAN

22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"

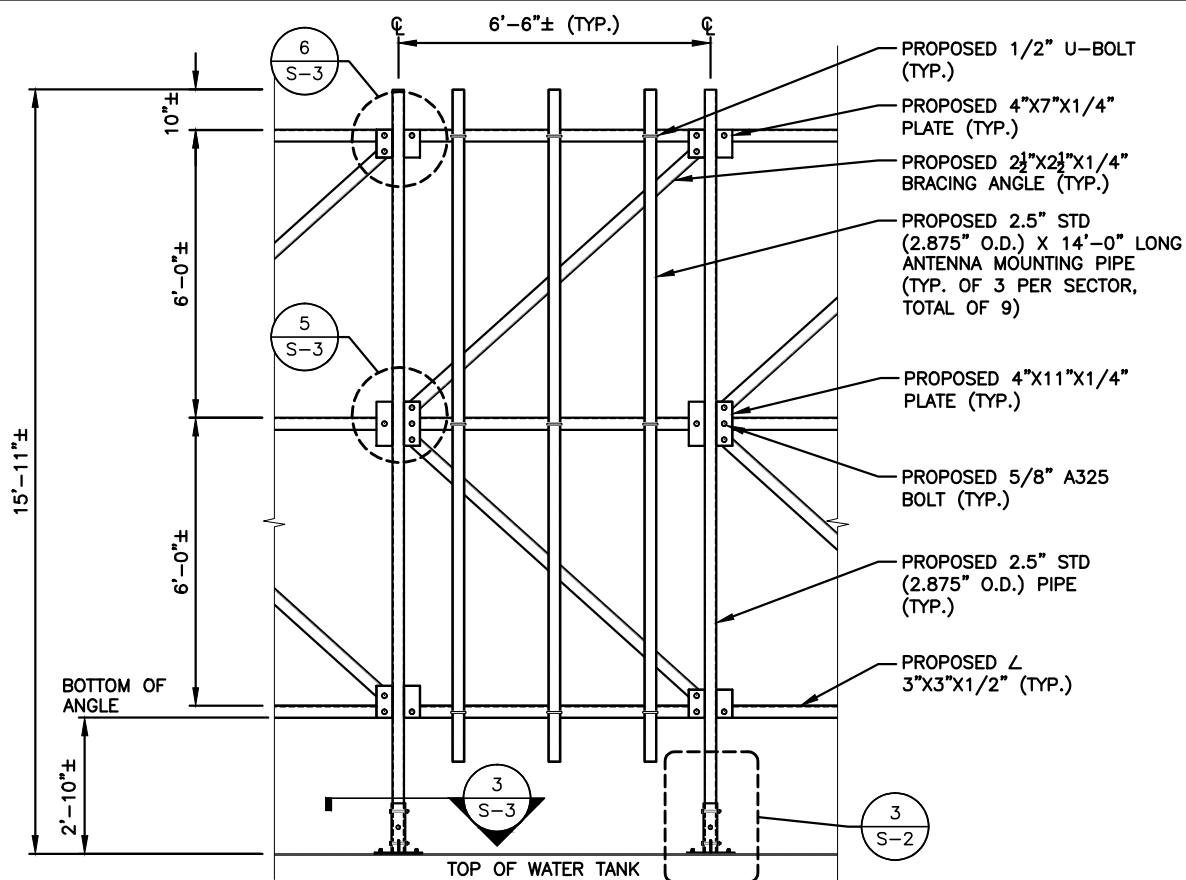


### CONNECTION DETAIL

22x34 SCALE: 3"=1'-0"  
11x17 SCALE: 1-1/2"=1'-0"

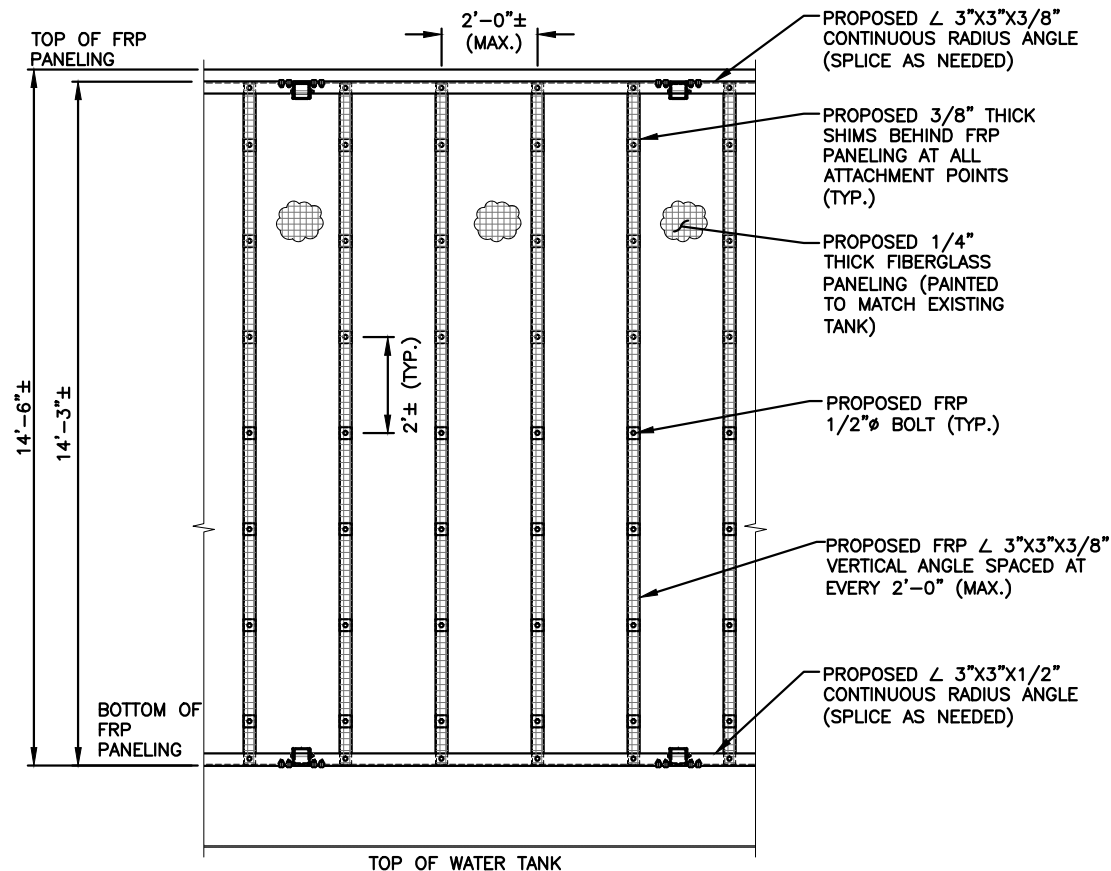
NOTE: IF EXISTING CONDITIONS DIFFER FROM THAT SHOWN ON THE DRAWING, THE ENGINEER SHALL BE NOTIFIED IN WRITING PRIOR TO PROCEEDING WITH CONSTRUCTION.

**STRUCTURAL NOTES:**  
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: FEBRUARY 06, 2017 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.



### PARTIAL FRP ENCLOSURE ELEVATION

22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"



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22x34 SCALE: 1/2"=1'-0"  
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## T-MOBILE NORTHEAST LLC

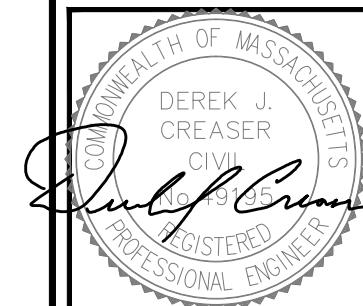
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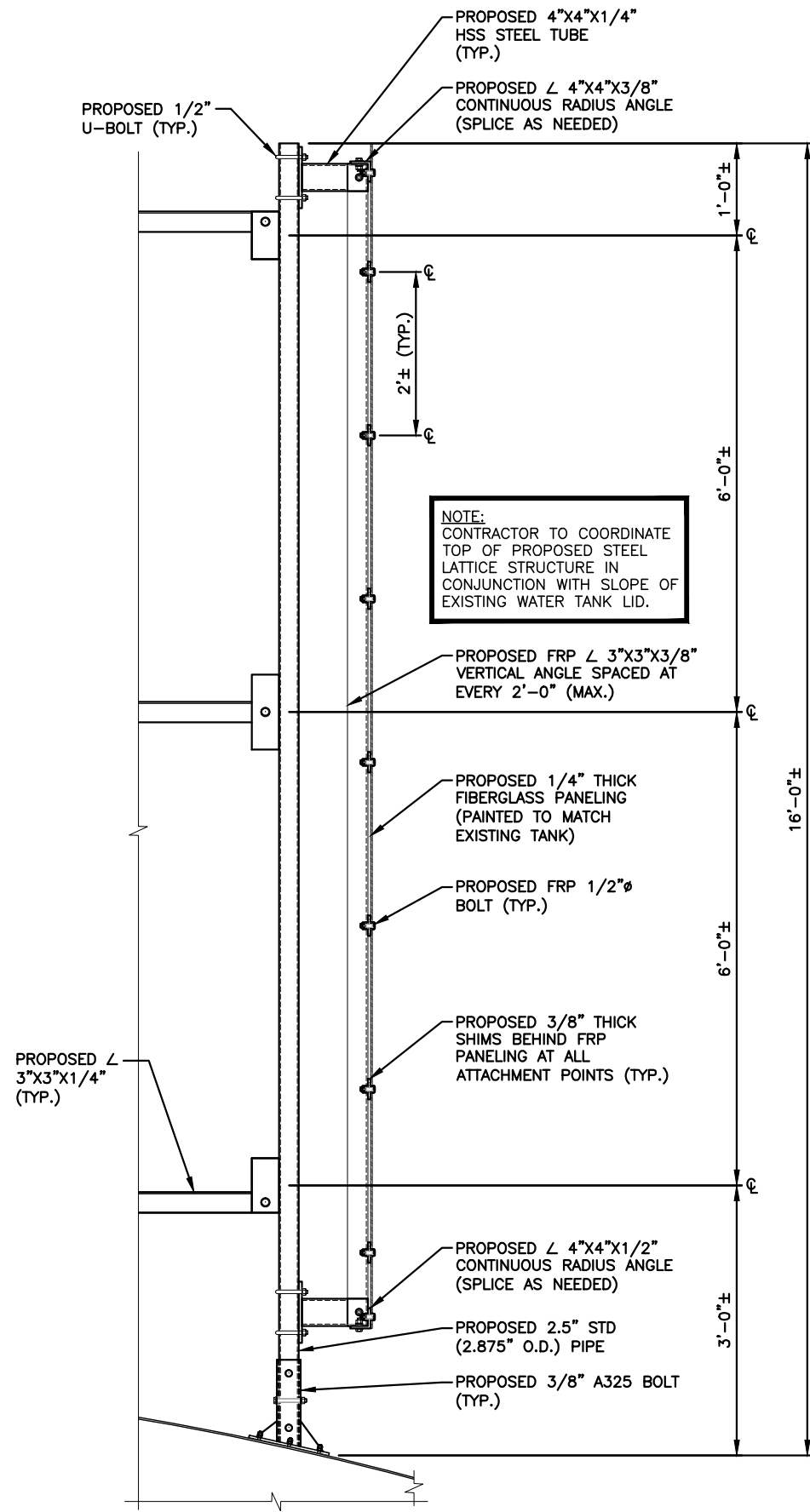
SHEET TITLE

PROPOSED ANTENNA  
FRAME

SHEET NUMBER

S-2



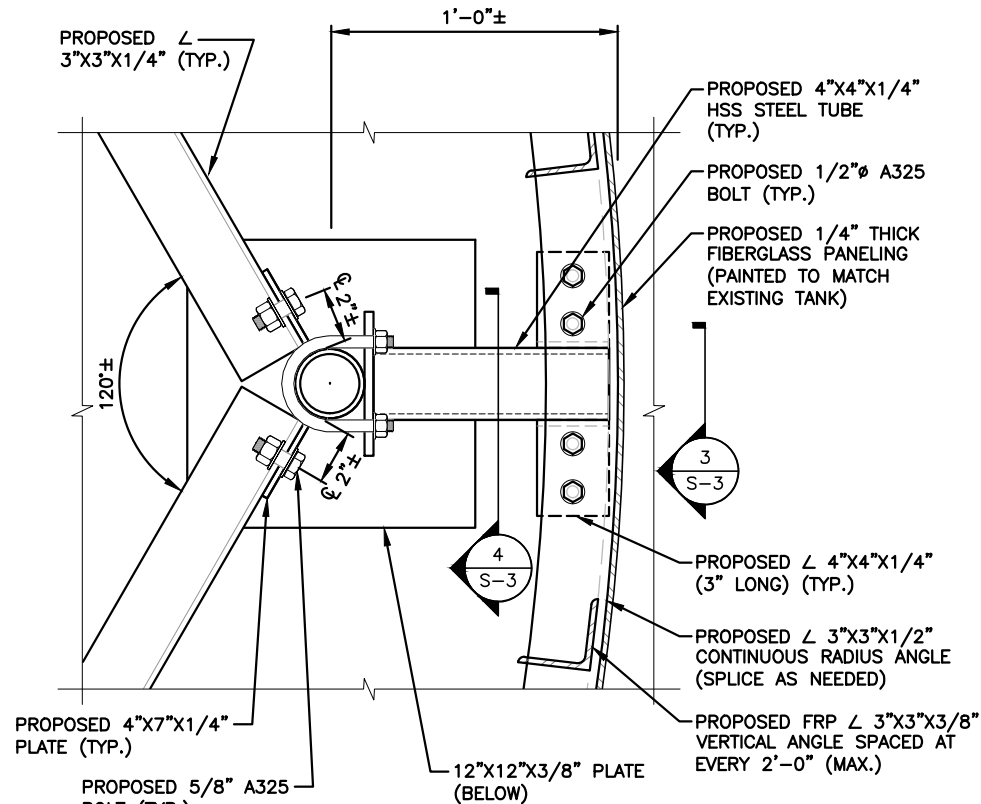


**FRP ENCLOSURE SECTION**

22x34 SCALE: 1"=1'-0"  
11x17 SCALE: 1/2"=1'-0"

1  
S-3

0 0'-6" 1'-0" 2'-0" 3'-0"

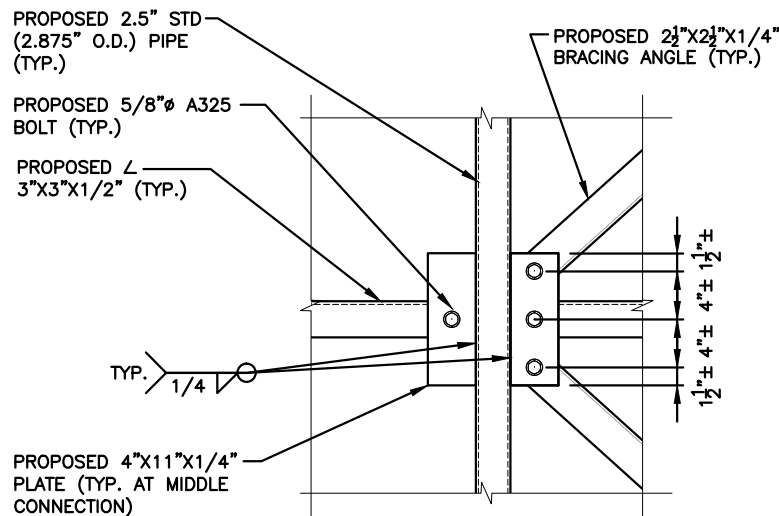


**CONNECTION DETAIL**

22x34 SCALE: 3"=1'-0"  
11x17 SCALE: 1-1/2"=1'-0"

2  
S-3

0 0'-2" 0'-4" 0'-8" 1'-0"

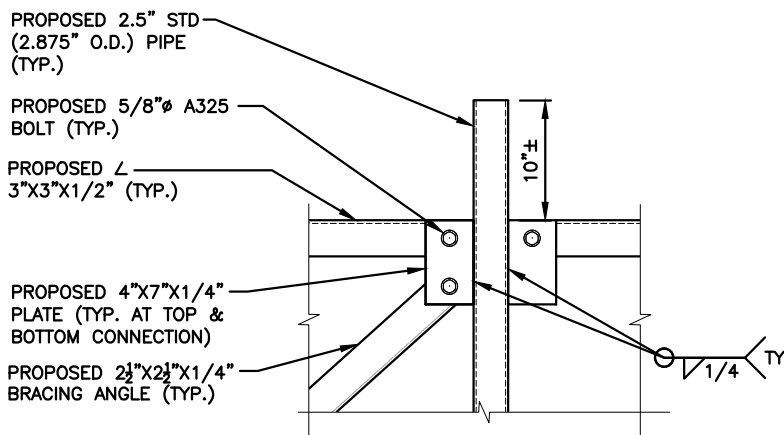
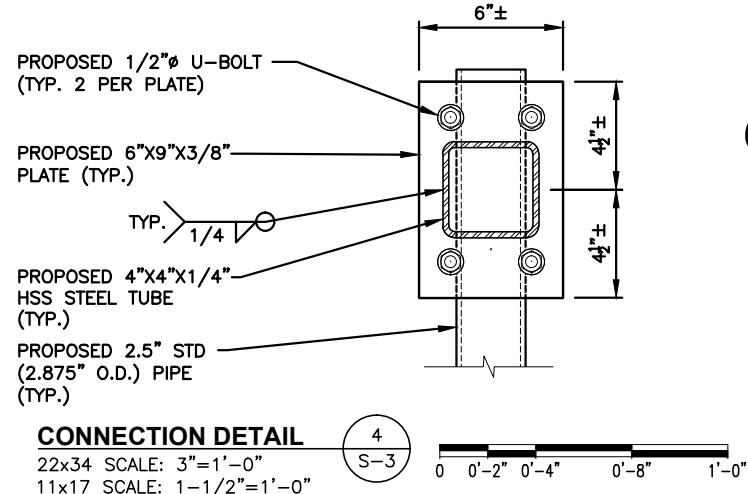
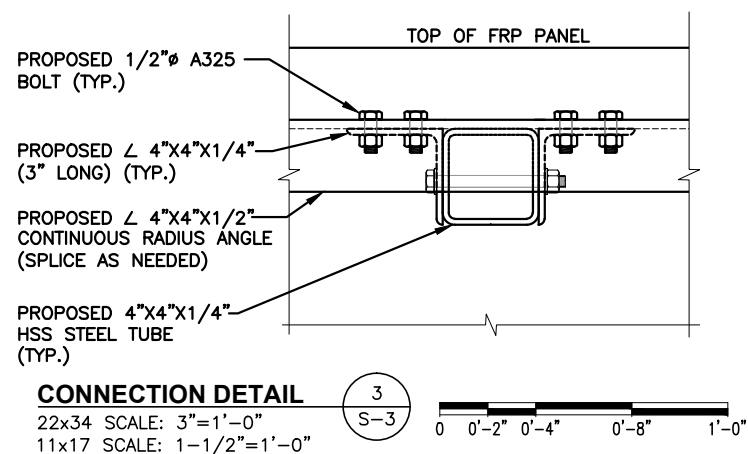


**CONNECTION DETAIL**

22x34 SCALE: 3"=1'-0"  
11x17 SCALE: 1-1/2"=1'-0"

5  
S-3

0 0'-2" 0'-4" 0'-8" 1'-0"



**CONNECTION DETAIL**

22x34 SCALE: 3"=1'-0"  
11x17 SCALE: 1-1/2"=1'-0"

6  
S-3

0 0'-2" 0'-4" 0'-8" 1'-0"

## T-MOBILE NORTHEAST LLC

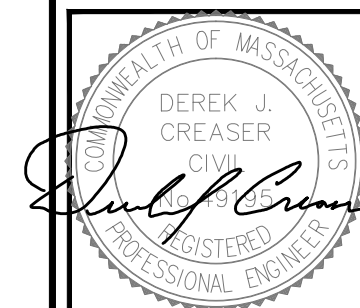
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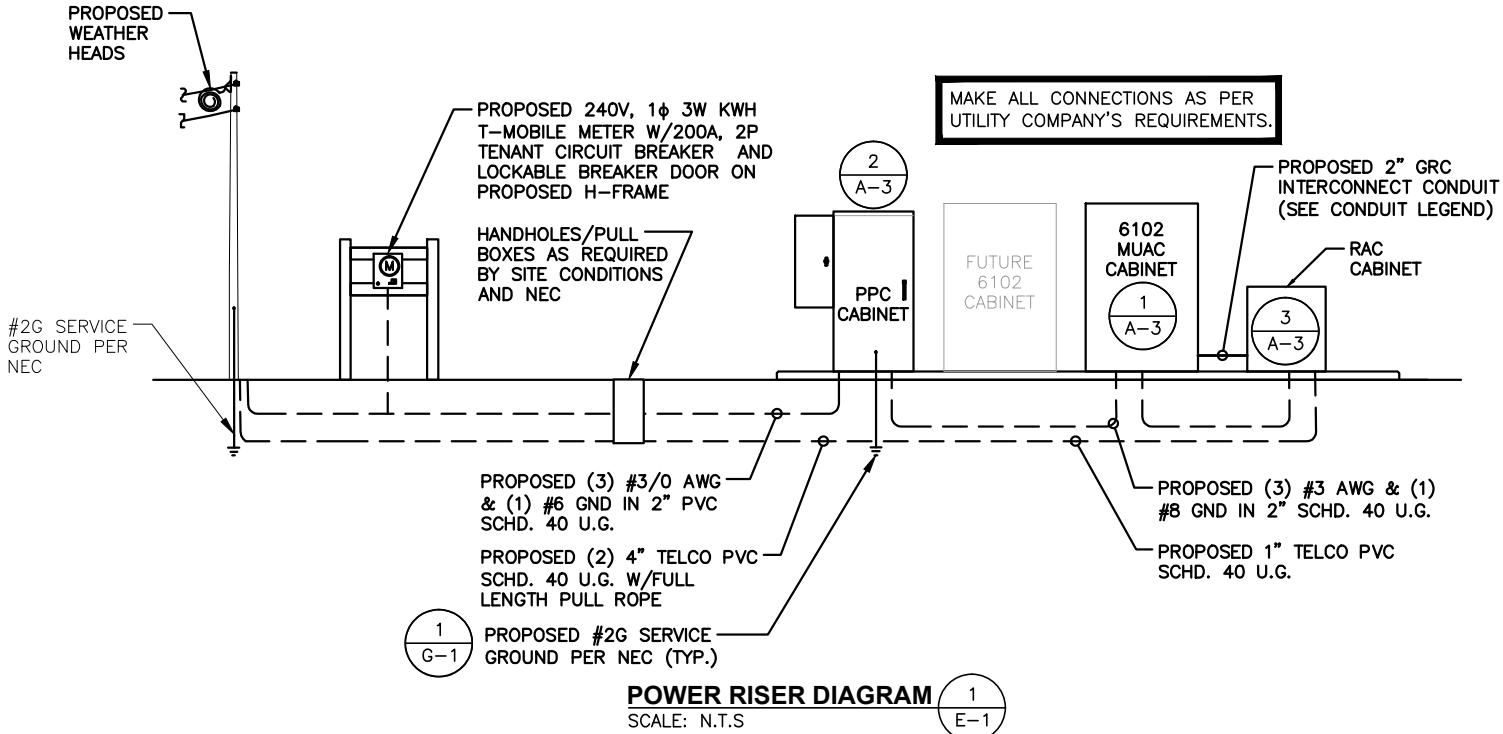
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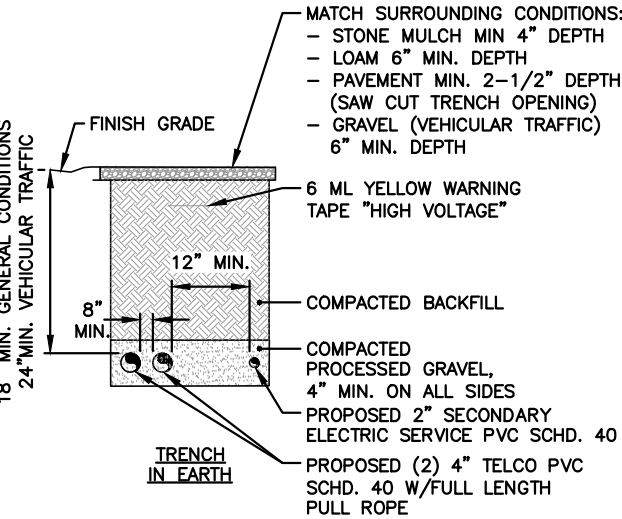
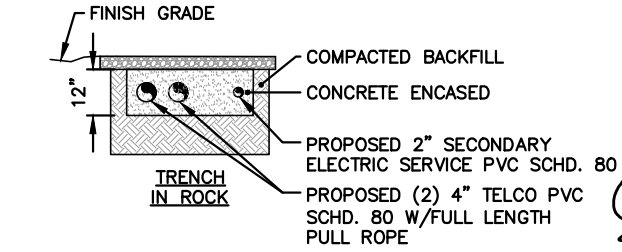
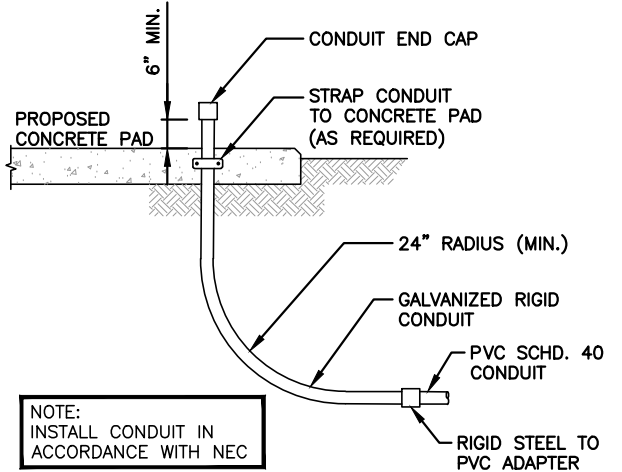
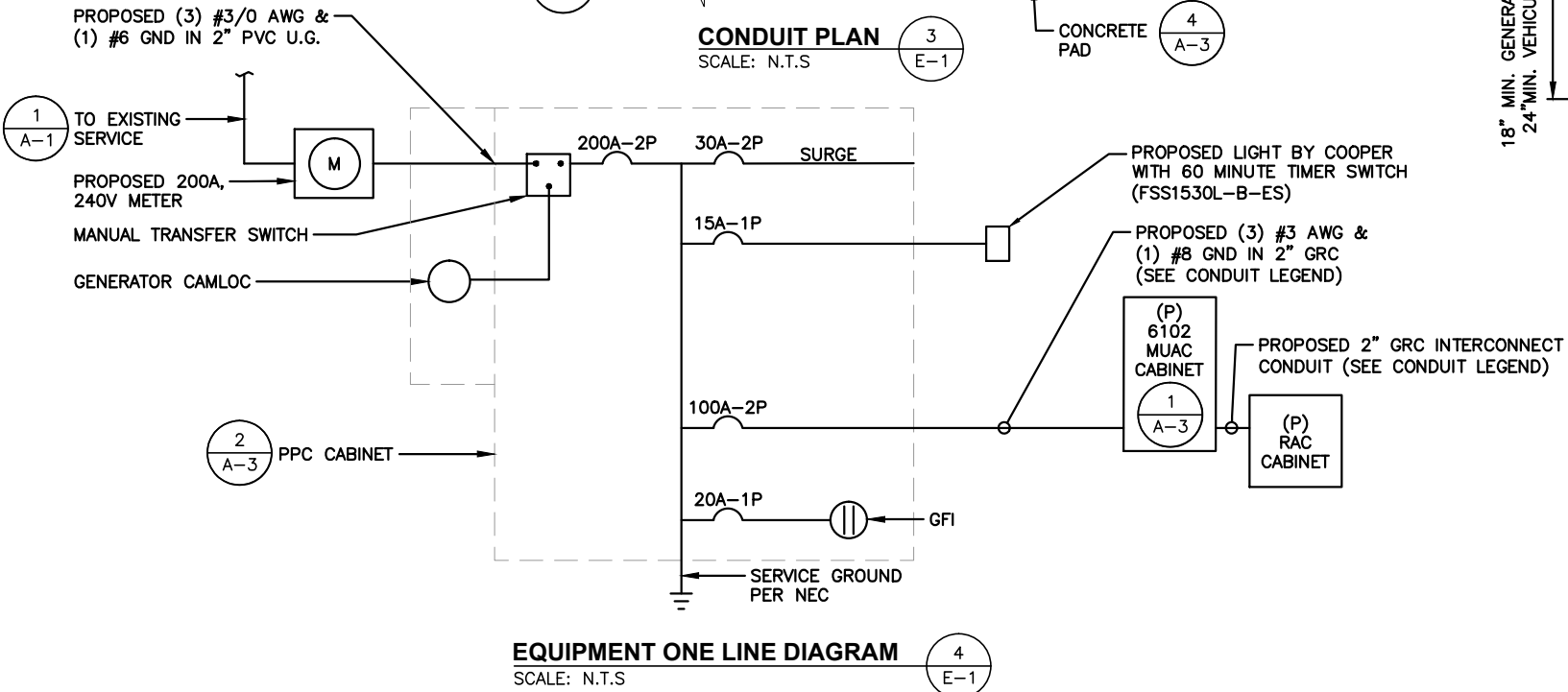
ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.

LEGEND	
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
G	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
⏚	GROUND
MGB	MASTER GROUND BAR
○	MECHANICAL CONNECTION
●	CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
—	EXPOSED WIRING
—#6G—	#6G AWG INSULATED STRANDED
—	COAXIAL CABLE/HYBRID CABLE
⦿	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⦿*	GROUND ROD WITH TEST WELL
⦿●	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



CONDUIT LEGEND	
—	2"φ GRC INTRCONNECT KIT, -48V DC, ON CONCRETE PAD, (1) CONDUIT PPC TO 6102 AND (1) CONDUIT PPC TO FUTURE 6102, ANCHOR AT 3' INTERVALS, GROUNDING BOND AT EACH END
---	2"φ PVC SCHD. 40 CONDUIT, AC-POWER, BELOW CONCRETE PAD, (1) CONDUIT PPC TO 6102, (1) CONDUIT PPC TO RAC
----	2"φ PVC SCHD. 40 CONDUIT, TELCO, BELOW CONCRETE PAD, (1) CONDUIT PPC TO RAC, (1) CONDUIT RAC TO 6102



**SPECIAL WORK NOTE:**  
EXISTING UNDERGROUND UTILITY LOCATIONS ARE UNKNOWN. WHERE DIRECTED OR REQUIRED, HAND-EXCAVATE PROPOSED UTILITY TRENCHING

**BURIED CONDUIT DETAIL**  
SCALE: N.T.S.

**T-MOBILE  
NORTHEAST LLC**  
15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
OFFICE: (508) 286-2700  
FAX: (508) 286-2893

**CENTERLINE  
COMMUNICATIONS**  
95 RYAN DRIVE #1  
RAYNHAM, MA 02767

**HUDSON  
Design Group LLC**  
45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

COMMONWEALTH OF MASSACHUSETTS  
DEREK J. CREASER  
CIVIL  
No. 49195  
REGISTERED  
PROFESSIONAL ENGINEER

CHECKED BY: RP

APPROVED BY: DJC

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ELECTRICAL DETAILS  
& NOTES

SHEET NUMBER  
**E-1**



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4.

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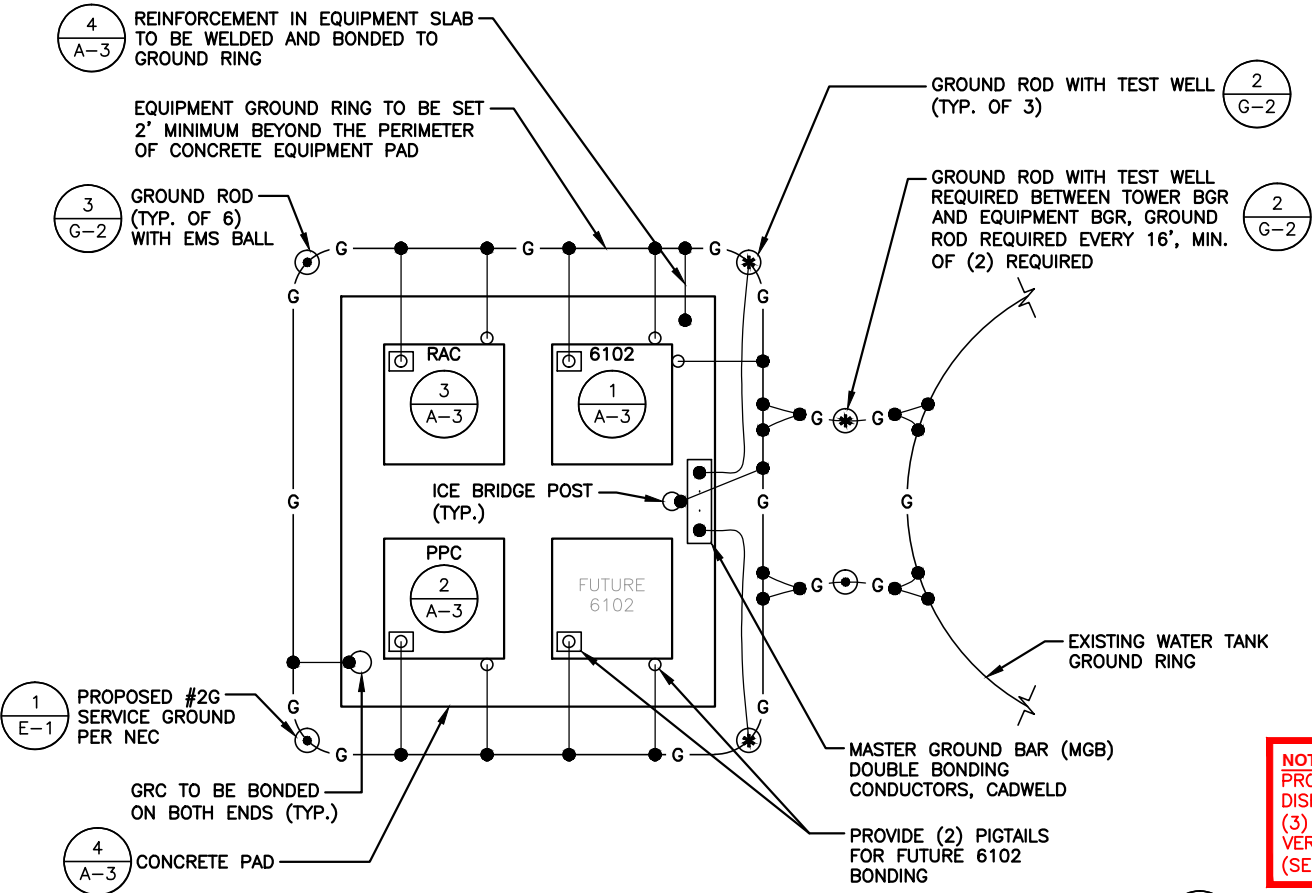
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9.

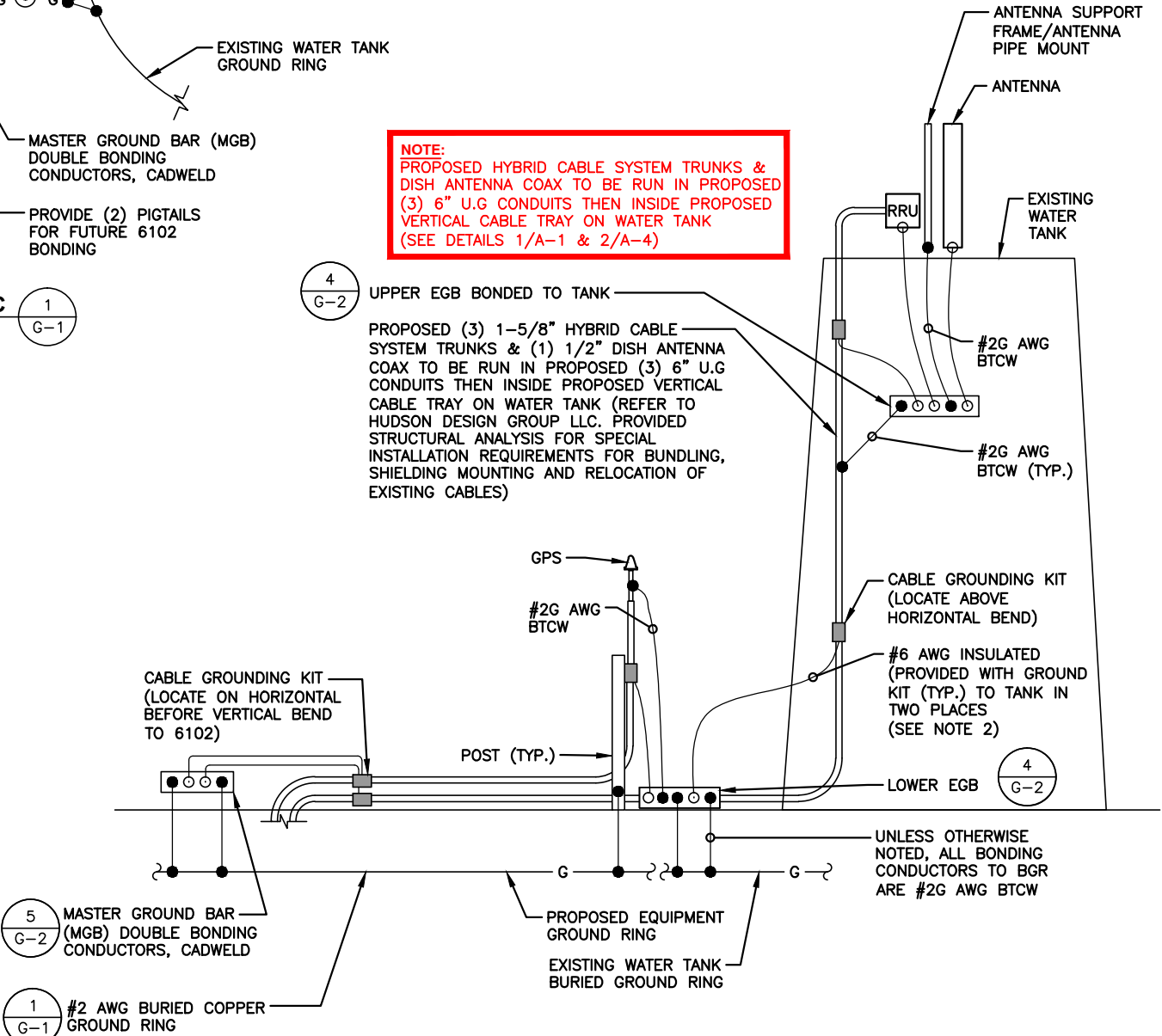
RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10.

ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.



EQUIPMENT PLAN GROUNDING RING SCHEMATIC  
SCALE: N.T.S.

NOTE:  
PROPOSED HYBRID CABLE SYSTEM TRUNKS & DISH ANTENNA COAX TO BE RUN IN PROPOSED (3) 6" U.G CONDUITS THEN INSIDE PROPOSED VERTICAL CABLE TRAY ON WATER TANK (SEE DETAILS 1/A-1 & 2/A-4)



GROUNDING RISER DIAGRAM  
SCALE: N.T.S.

LEGEND	
A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BGR	BURIED GROUND RING
BTCW	BARE TINNED SOLID COPPER WIRE
G	GROUND
≡	GROUND
MGB	MASTER GROUND BAR
○	MECHANICAL CONNECTION
●	CADWELD CONNECTION
EGB	EQUIPMENT GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
—	EXPOSED WIRING
—	#6G AWG INSULATED STRANDED
—	COAXIAL CABLE/HYBRID CABLE
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
⊛	GROUND ROD WITH TEST WELL
⊕	EXOTHERMIC (CAD WELD) OR MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

- NOTE:
1.

BASE BID TO INCLUDE INSTALLATION OF A BURIED GROUND RING AND (6) GROUND RODS OR SINGLE XIT HORIZONTAL CHEMICAL ROD AS DETERMINED BY FIELD CONDITIONS. ADDITIONAL RODS AS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE.
2.

MAXIMUM VERTICAL/HORIZONTAL DISTANCE BETWEEN CABLE GROUNDING KITS SHALL NOT EXCEED 100 FEET. INSTALL ADDITIONAL KITS AS REQUIRED BY FIELD CONDITIONS.
3.

ALL CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S GUIDELINES.
4.

ALL ABOVE-GRADE DOWNLEADS TO BGR SHALL BE INSTALLED IN 1" NON-METALLIC CONDUIT SECURED EVERY 2' WITH NON-METALLIC CLIPS.

T-MOBILE  
NORTHEAST LLC

15 COMMERCE WAY, SUITE B  
NORTON, MA 02766  
OFFICE: (508) 286-2700  
FAX: (508) 286-2893

CENTERLINE  
COMMUNICATIONS

95 RYAN DRIVE #1  
RAYNHAM, MA 02767

HG  
HUDSON  
Design Group LLC

45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

COMMONWEALTH OF MASSACHUSETTS  
DEREK J. CREASER  
CIVIL  
No. 49195  
REGISTERED  
PROFESSIONAL ENGINEER

CHECKED BY:	RP
APPROVED BY:	DJC

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
6	03/12/18	REVISED FOR CONSTRUCTION	VP
5	02/26/18	REVISED FOR CONSTRUCTION	VP
4	01/18/18	REVISED FOR CONSTRUCTION	VP
3	01/09/18	ISSUED FOR CONSTRUCTION	VP
2	11/15/17	REVISED FOR CONSTRUCTION	VP
1	04/26/17	ISSUED FOR CONSTRUCTION	VP
0	03/08/17	ISSUED FOR PERMITTING	VP/HH

SITE NUMBER:  
4WL0968A

SITE NAME:  
LELAND HILL  
WATER TANK

SITE ADDRESS:  
29 LELAND HILL ROAD  
GRAFTON, MA 01757  
WORCESTER COUNTY

SHEET TITLE  
GROUNDING  
SCHEMATIC &  
RISER DIAGRAM

SHEET NUMBER  
G-1



ELECTRICAL NOTES

1.

ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2.

ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3.

THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4.

GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5.

ELECTRICAL AND TELCO WIRING EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6.

RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7.

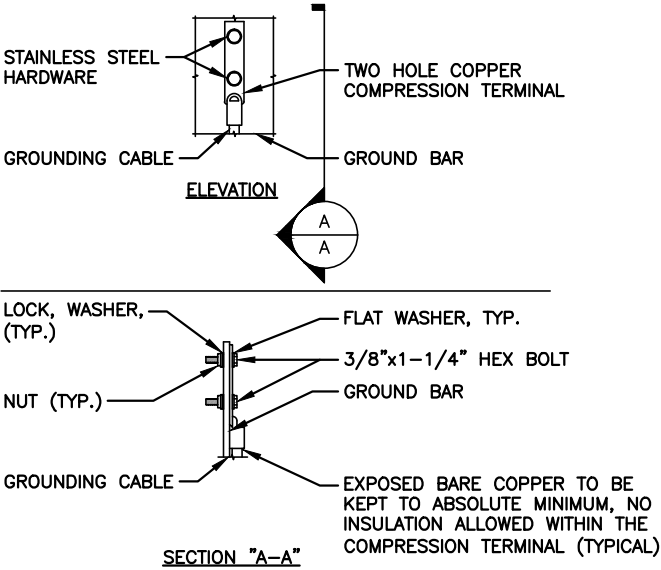
ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8.

RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL METER BANK AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9.

RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-3. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
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PPC	POWER PROTECTION CABINET
⊗	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL



- NOTE:
1.

"DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2.

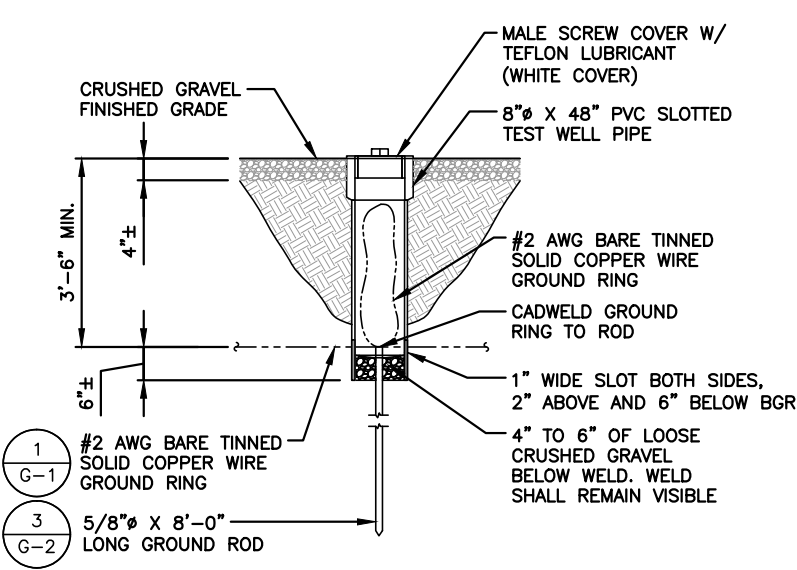
OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3.

CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

1  
G-2



NOTE:

1.

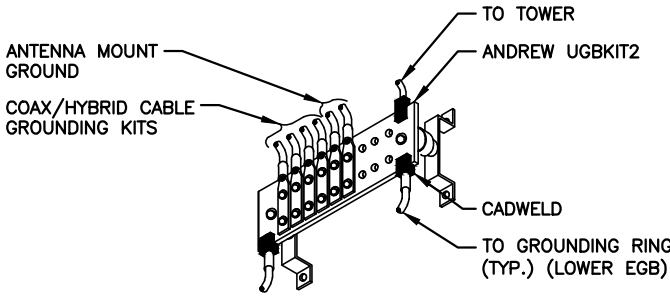
PROPOSED BGR TO BE INSTALLED 3'-6" MIN. BELOW GRADE OR BELOW LOCAL FROST DEPTH, WHICHEVER IS GREATER.
2.

ONE TEST WELL SHALL BE PROVIDED BETWEEN THE TOWER GROUND LOOP AND TWO ON THE EQUIPMENT GROUND LOOP

GROUND ROD TEST WELL DETAIL

SCALE: N.T.S

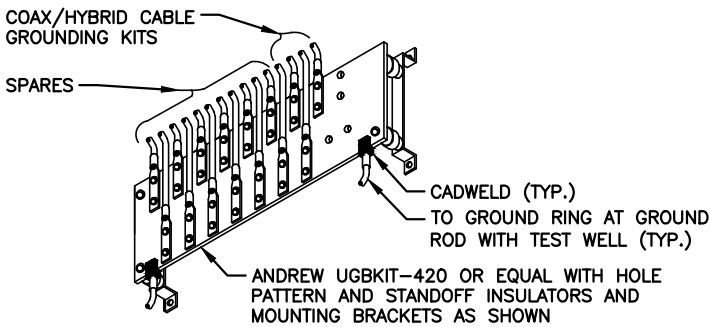
2  
G-2



EQUIPMENT GROUND BAR (EGB)

SCALE: N.T.S

4  
G-2



MASTER GROUND BAR (MGB)

SCALE: N.T.S

5  
G-2

T-MOBILE NORTHEAST LLC

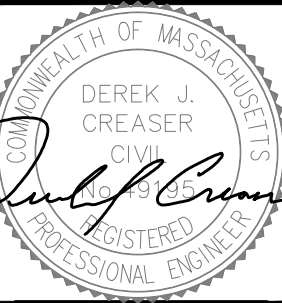
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SHEET TITLE  
GROUNDING  
DETAILS  
& NOTES

SHEET NUMBER

G-2